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Specimen Physico-Medicum,

D E

Corpore Humano, & ejus Morbis.

OR, AN

ESSAY

Concerning the

Knowledge and Cure

Of most

DISEASES

Afflicting

Human Bodies.

To which is Annex'd

A short Account of SALIVATION,
and the Use of MERCURY.

With a Copious INDEX.

By P. PAXTON, M.D.

L O N D O N :

Printed for WILLIAM INNYS, at the
Prince's-Arms in St. Paul's Church-yard. 1711.

GREEN
MED. & U
ASSOCIAT



THE
BOOKSELLER
TO THE
READER.

WHEN *Booksellers* presume to write Panegyrics upon Authors, or to censure their Works, they may well expect the Scorn of the Learned World. Such a Preface from the Publisher is as great a Solecism, as placing the Picture of Madam *Wedelius* before one of her *Husband's* fam'd Books. We (I think) ought to leave it to *Libertus*, *censorem agere*, to direct you *de scribendis & legendis Libris*; and should concern our selves no farther than *de æstimandis*.

Far be it from me therefore to attempt the Character of the late Dr. *Paxton*, or this his *Posthumous Book*; let his known Reputation, his learned Friends, and his own Preface speak: However (as an honest Relator of Fact) I may here agreeably enough observe, That our Author put a distinguishing Value upon this Book; for in his *Directorium Physico-Medicum*, he more than once refers to it. It

It must be confess'd, that in the Year 1701. our Author publish'd a Book of this nature, which was wonderfully well received; this was so grateful to him, that he seem'd chiefly to have at Heart the perfecting this Scheme: Accordingly he made many and large Alterations and Additions to it; and then turn'd it into *Latin*: But I find by his Papers, that, after all his Pains, he believ'd it would be much more useful if Publish'd in *English*: This Advice of his last Thoughts I have follow'd; and do assure the Reader, that I have Printed it from his own Corrected Copy.

T H E

The Author's P R E F A C E.

THE Wonders perform'd in the Mathematicks give an Evidence, how capable Arts are of Improvements, when founded upon plain and certain Principles; and the continued Progress in that Science is a Testimony, that Emulation will inspire Men to pursue Knowledge, when Uncertainty does not engage them in Disputes. The slow Progression in Physick gives us an Instance, how difficult it is (with the greatest Application) to advance Knowledge, in an Art where Principles are wanting; and the frequent Disputes amongst Physicians are Proofs, that Wranglings will not be avoided, when Arts are built upon Suppositions or Opinions. Had the Theory of Physick, like that of the Mathematicks, been rais'd upon Principles that carry their own Evidence, there had been no grounds for Disputes: And had the Example of the great Hippocrates been follow'd; or the wise Advice of the discerning Celsus regarded, in forming Theories for Physick by Observations; such Principles might have been discover'd, as would have plac'd that God-like Art out of the reach of Wranglings. But that excellent Method chalk'd out by those great Men, not being calculated to the admir'd Learning of former Ages, soon

soon became despis'd and neglected; and then Errors, like a mighty Torrent, broke in and overspread that useful Art. For Physick (according to the Practise of those Ages) being to be then adjusted to the Philosophy of the Schools, was to be moulded and fashion'd to Scholastick Forms; Principles must therefore be invented, to which Nature must be thought to conform; and Modes establish'd, from which she must not depart. Human Infirmities, like Plants and Brutes, must be rank'd into their kinds, and must be endu'd with specifick, but common Natures. Hypotheses spun out of Mens Brains must be suited to these Doctrines, by which Nature must be directed to form Diseases, and to put the Marks and Boundaries to the several Kinds of 'em. The several Species of Diseases are to be look'd for by such Marks as the Schools had prescrib'd; and if they do not regularly appear in those Forms, they are look'd upon either like Gimars or Mules among Brutes, as somewhat compounded of two different Kinds; or as monstrous and strange Creatures that have proper Natures, and are of some Species, but as yet unknown.

But notwithstanding Men (supported by the Reputation of Learning) did religiously agree that Diseases had their certain and determinate Natures, yet they were often perplex'd, when they were to apply particular Cases to this or that Species; because refractory Nature would not always comply, in forming Diseases according to such Images as Men had prepar'd for her to imitate; but would proceed according to such Laws as God had prescrib'd

prescrib'd, which were often widely different from what Men had contriv'd: By which means Diagnostics became disputed, in that Men divided concerning the Marks of the Species; and Hypotheses came to be question'd, and by degrees exploded, in that the Symptoms of Diseases were not to be explain'd by such imperfect Contrivances, and Medicines, and Methods of Cure disus'd, condemn'd and alter'd: Yet so sacredly was the Character of what was esteem'd Learning preserv'd, that Men would not or durst not depart from the Forms, when they pretended to correct the Errors those very Forms had introduc'd. Thus altho' they differ'd in every thing, the Chymist despising the Hypothesis, the Methods and Medicines of the Galenist; and the Galenist of the Chymist; the Favourers of Fermentation; of the Doctrine of Salts and Acids, or of both; yet all agreed in the Form of treating Human Infirmities under certain and distinct Kinds; altho' that very Doctrine, as it is intirely founded, so it naturally leads Men into an Opinion of common Natures specific Essences, which seem to be us'd for the same Ideas as substantial Forms, the very Opinion they explode and despise.

And as the Mischief and Imperfections that have so long flourish'd in Physick, have proceeded, in that those Rules that were in its Infancy observ'd, were afterwards neglected: So it is not likely that Art should improve, unless those early and wholsom Methods are restor'd, and all those pompous Forms, that the Vanity or Usage of times hath recommended, be perfectly laid aside.

To this purpose I've attempted to show the *Vanity* of such receiv'd Forms, and to demonstrate, that *Physick* may be establish'd on such Principles, as will deliver it from those *Reproaches* and *Imperfections* it hath been so long charg'd with.

In this *Essay* I pursue an *Historical Method*, and endeavour to strip myself perfectly from the *Prejudices of Words*; and for this end, I strictly observe what *Nature* only does in the forming *Diseases*, without regard to any *Species* or *Kinds* whatsoever: And the better to comprehend the *Nature of Diseases*, I consider the divers *Parts* of a *Human Body*, and the different *Offices* and *Uses* they perform; by which means I discover their *Faults* and *Imperfections*, which are their *Diseases*.

For discovering the *Methods* and *Medicines* by which these *Diseases* are to be cur'd; I first consider a *Medicine* as a *Natural Substance*, and how, as such, it operates upon other *Beings*: And then I consider it as a *Medicine*, in relation to our *Bodies* and from that relation I observe what it performs in a *human Body*; and from that *Performance*, which is its *Operation*, I reason concerning its *Use*.

For the settling the *Certainty* and *Truth* of *Principle*, I make use of the *Evidence of Sense* as being the only *Criterion* our *Natures* are endow'd with for that purpose.

For the forming *Ideas* of what we denote by *Sickness* or *Diseases*, I appeal to our own *Natures*, and consider the differing *Parts* of our *Bodies*, and their separate and differing *Uses*; for notwithstanding all co-operate for the good of the whole, yet each hath its particular *Office*.

T H E

Introduction.

I Have endeavour'd in the following Discourse to shew what Diseases really are, in what they properly consist; and how they are produc'd: And as a Consequence to this, I have attempted to demonstrate how they are to be remedied; and how the Operations of Medicines are performed in a humane Body. But in doing this, I strictly confine my self to a plain and historical Method; and if sometimes the Nature of the Discourse necessarily leads me to some Philosophical Reasonings, which are too fine to admit of any immediate Proof from the Evidence of Sense; I have drawn my Conclusions from such Premises as are not to be denied.

I. But in order to give some Light into the ensuing Essay, I must premise that every humane Body, is but a noble Machine, curiously contrived, and divinely fashion'd, out
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of that Mass of passive Matter common to all corporeal Beings. This I think carries its own Evidence: However, its Nutrition, Growth, and Dissolution, the great variety of Vicissitudes and Changes it daily undergoes, abundantly evince it; and God's sacred Word undeniably proves it.

But altho' a humane Body thus partakes of the common Affections of other Substances; yet it surpasses such in a multitude of additional Excellencies, for it is endued with a Faculty of perceiving, thinking, understanding, and of moving it self: Yet these Perfections do not remove or destroy such Properties that are common to Matter; but being thus added, better that part of Matter that is fashion'd into a humane Body: And therefore remain no longer in that Matter, than that Matter continues a humane Body; for these being perform'd by the help of Organs, naturally vanish, as soon as the Operations of such Organs cease, by which they are made: As plainly appears, in that Death abolishes them there: And these being abolished, the Properties of Matter only appear.

A humane Body, altho' consider'd as one numerical Being, in that it hath Actions and Functions proper to it; yet it is really compounded of divers Parts, which being united, conjointly co-operate for the Performance of its Motions and Actions: And so
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long as these several Parts equally and regularly perform their Offices, so long the Body is well, or in Health; in that all its Actions and Functions are regular and perfect: But when the Parts decline or fail in their Uses, the Body is sick or diseased: Sickness and Health being only Relations, to the differing Conditions of their Actions, Functions or Motions that are proper to a humane Body, as Life and Death are to the Existence or Non-existence of such Actions.

Altho' Life, (or the Existence of such Actions or Operations that appertain to a humane Body,) is plainly founded in Motion, yet it is obvious, all Motion in such a Body does not constitute Life, by reason a Motion may be observed in some of the Parts after Life ceases; for dead Bodies swell, purge, putrifie, all which are but the Effects of Motion.

But this Motion thus observed in dead Bodies, does not inhere in all the *Parts* of such a Body; for it is only some that break Prison, and disunite, *viz.* the Fluids or Juices, which having a Motion congenite to their Natures, soon dissolve the common Union of the other Parts; when once the Actions and Motions of such cease: For if we consult a humane Body, altho' it is made up of very different Parts, as to their Forms, Magnitudes, Textures and Uses; yet they may be all consider'd under *two Kinds*, *viz.* either as

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their *constituent Parts or Particles unite and adhere* to each other, and so are *firm and consistent*; or as their *Particles divide*, and continually move, and so are *Fluid*. The first are always fixed and permanent in certain Places or Seats, from whence they cannot remove; the last are always moving and incessantly changing their Seats, unless confined and imprisoned by the first: And for this reason the Fluids are always contained in the Consistent, that they may be Useful for the Life of the whole, of which they make a part.

Life then being founded in such Motions that are proper to the several Parts of a humane Body; (and not in the intestine Motion of the Particles of the Fluids, which visibly remains after Death); and the Fluids being a part of a humane Body, have a Motion proper to them as such; and this is a circulatory or progressive One, by which they become useful to Life; and this Motion is proper to Life, in that it begins and ends with it: By which it is evident there are two different Motions appertaining to the Fluids, contained in a living humane Body; the first of which I shall call *Natural*, as being common to all such, as well those contained in our Bodies, as all others without them. The second I shall term *Animal*, as being only proper to a Body endued with Life; and this latter perfectly depends upon
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some Motion receiv'd from the Consistent, or Organical Parts, *viz.* the Heart, Arteries or Vessels; for it is most evident it is not natural to the Fluids, by reason it determines when Life ceases: But how the Motion of these organical Parts, by virtue of which the progressive, or circulatory Motion, is made, and so Life continued, shall be explained hereafter.

This *Animal* or *Organical Motion* is of two sorts; one of which is regulated by the Man, and is therefore *voluntary*; the other not in his power; for that is made without his knowledge, and continued without his Consent, and so is *involuntary* or *spontaneous*; and this latter seems essential to Life, and appears in all its Circumstances purely Mechanical; for when the *Fætus* is inclos'd in the Mother's Womb, it is made and continued by an impulse receiv'd from the Mother; for the Blood, during that inactive State, gently slides thro' the *Foramen Ovale*, neglecting the Heart, which is not then befitted to be employ'd in making the Circulation: But when once the Infant is excluded the Womb, and is entirely separated from its Mother's Body, and then becomes an independent Being; the Blood takes another course, for the Air rushes into the Infant's Lungs, and gives the Blood a new motion, for from thenceforward it passes into the Ventricles of the Heart, where it

receives an impulse sufficient to whirl it about in Circulation thro' every part of the Body, and entirely forsakes the back passage of the *Foramen Ovale*: And as the rushing in of the Air appears to be the first Physical Cause of beginning a separate and independent Motion in this new Being; so likewise does the interchangeable Motion of the inspired Air seem to be as necessary for the continuing this, as Weights or Springs are to other Engines; for with-hold but this help, and the crimson Gore becomes unable to move.

The other sort of Motion, which is voluntary, seems to flow from a very different Principle; for that is began, continued, alter'd, or hinder'd, as the Man pleases; as every one may in himself experience, in that he can move, stand, walk, write, sit still, &c. nay, he can either turn about, review, reflect upon his own Thoughts or Ideas. Yet this voluntary Motion, altho' it flows from a Principle different from the vital one, yet it remains no longer than the vital Motion contains. The consideration alone of these Powers, which every one may experience in himself, is to me an irrefragable Argument, that there is somewhat in us, far exceeding bare and unassisted Matter: for by these we plainly find we have an active Power of beginning, altering, hindring, or suppressing Motion at any time we please; which

which being inconsistent with, and repugnant to the very nature of Matter, must undoubtedly prove one of these two things; either that there is somewhat in us, very different and distinct from Matter; or that some part of Matter is so divinely modify'd, as to become by that capable of performing effects, transcendently surpassing any power in the nature of it. And if God does thus exert his Infinite Wisdom, Power and Goodness, upon blind and passive Matter, in the formation of Man, as it is clear he does, by these Powers, we experience in our selves, then, it is evident, that he may by the same Omnipotency, continue a subsistence to the subject of this active and intelligent Power, be it either a substance distinct from Matter, or be it only Matter thus divinely refin'd and modify'd; after that Life, that depends upon the Body, is dissolv'd. And that God will do this, we have his sacred Promises deliver'd in Holy Writ.

IV. But to return, it is evident the Mind in the performance of all motions subordinate to it, uses some nimble and active Bodies, call them Spirits, or what you please, that pass the Conduits of the Nerves, as the ready Messengers, or rather Instruments of it, in this or that part: This appears in that but intercept their passage, but by cutting or binding the Nerve, and all organical motion

tion will be there lost. It is likewise evident, that altho' the Mind hath power of beginning, continuing or suppressing motion in the Organs; yet notwithstanding this power is limited and bounded to some certain Temper, Order or Continuity of Spirits: For if the Spirits become disorder'd or perplex'd, they fall into ungovernable Tumults, and bring disorderly and unnatural motions in those very Parts they shou'd regularly actuate; and this without the knowledge, guidance, or consent of the Mind; as is most notorious in Convulsions (I am not ignorant the sense of the Word hath lately been carry'd farther, but that not being material to my design, I shall not examine how justly): By what hath been observ'd, it may be concluded, That the *organical or consistent Parts*, altho' some of 'em, *viz.* the Muscles, are the certain movers in all external motions, yet even they are only passive in it, having none of themselves, but do, and will remain immoveable; unless they are actuated, or have motion began in them, or communicated to them by the Spirits; which manifestly appears, in that if their influx be but intercepted, all farther motion is there lost: From whence it is evident, there is nothing in the Muscles, but only an aptitude to be thus moved, as being exquisitely fashion'd for that end; and their motions being thus deriv'd from the Spirits, must be as they are, sup-
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posing the Organs not injur'd; when therefore they, *viz.* the Spirits, are become deprav'd, or alter'd, the motions proceeding from them must be so, as is clear in fact they are, by the frequent disorders to be observ'd in them.

V. This being premis'd of our Bodies, we may in the next place consider, that all Medicines, by which I understand such particular Substances, that are esteem'd to be endow'd with a power of healing (*viz.* such things as are administred to humane Bodies, in order to alter, assist, or help humane Nature, when any ways griev'd, oppress'd, alter'd, or injur'd in its Oeconomy) are really and truly natural Bodies, or corporeal Substances, as being only some Members of the Vegetable, or Mineral, or Animal Kingdom, selected and set apart for this use, and therefore, as such, can only operate as all physical Agents do, by Contact; for to say otherwise, that is, that a Body can operate where it is not, is to affirm, it may be in different places at the same time, which is to destroy its Identity, and is, in direct terms, a Contradiction. Medicines therefore being only corporeal Substances, must naturally act according to the Laws and Powers of such Beings, and not by any magical, supernatural, or I know not what power, which neither do nor can belong to their Natures; and consequently
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Medicines act not of themselves, as thinking Intellectual Natures for an end ; that is, not by deliberation, or choice, but by *impulse*, that is *necessity*. And so long as natural Substances, that are us'd as Medicines, continue unalter'd, or the same, it is evident they naturally will have the same power, always to produce the same effects ; by reason having no innate active power to change themselves, like thinking Beings, they must remain the same in respect to other Bodies until they are some ways alter'd from without ; and then if once alter'd in their natures or properties, they are no longer the same substances : so that if Substances that are in all things the *same*, do not effect the same changes, it is not from any default in them (because they are not alter'd ;) but from the incapacity in the Patient, or Body worked upon, to receive the same operations from them. Thus may we observe in all other corporeal Beings, that there is not only required a power in the Agent, but a disposition or capacity in the Patient, to make the effect certain and regular ; for if there is not, we do but in vain expect 'em. Thus the same Sun, by his benign influence at one time kindly calls out of the productive Earth, Plants and Vegetables ; and at another time cruelly parches, dries them up and destroys them : And yet the Sun is not changed, but still continues the same Agent.

in both these so contrary Effects; and operates in the same way, that is, darts down his warmer Beams upon the Earth's Surface, by which she is only mov'd and warm'd, and when she is succulent and moist, Plants spring out and flourish; but when dusty and dry, these her tender Offsprings, by the same Rays are parch'd up, and wither'd.

VI. But perhaps some may object, that admitting that Medicines are natural substances, and that so long as they continue the same, they must have the same Power to operate upon us; and that therefore, if their operations are not regular, it must proceed from some incapacity in our Bodies to receive such: Yet notwithstanding their operations being perform'd within us, where neither Hand, nor Eye, nor any other Sense can be employ'd to inform, there can be no other ways of discovering their operations, than by observing their effects; and because these have hitherto been experienc'd to be uncertain, therefore their operations must naturally be so. To which I think may be answer'd, That the ordinary productions of Nature, of whose regular Effects Men rarely doubt of, are obnoxious to the very same Objection: Because Nature always employs Instruments so minute, to be separately examin'd by our gross Faculties; and these work in such dark and narrow Recesses, as
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no Sense can penetrate; by which means we are entirely excluded from observing their manner of operations; and yet by carefully heeding what effects flow from such Instruments, we obtain an assurance what hereafter will. And did Men but as circumspectly observe what really the Medicine does, and as carefully heed the several circumstances of the Body, in the application of it, and impartially distinguish, what is to be expected from the Medicine, they could be no more deceiv'd in them, than they are in other Agents; since the discovery of their operations is incumbred with no other difficulties, than what are common to other things.

VII. Howsoever, altho' Men have hitherto been so remiss in these Observations, yet it is evident, the certain powers and operations of Medicines may be known, if Men will but carefully and diligently attend to them; because several of them are so. For who is there, that is but moderately vers'd in Pharmacy, but is well assured that some Drugs will purge, that is, will sollicit the Bowels into that motion we call so? and that others will Vomit, and so forth; and in this they are not often deceiv'd. But then if Men will expect effects from them, that will not always succeed to such operations; it can be no wonder if they often deceive themselves, and disappoint others:
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for instance, altho' some Medicines will undoubtedly purge, yet, whether that will be to the advantage of the Person to whom it is given, depends not upon that, but upon the fitness and disposition of his Body for such an operation; for purging here is the proper effect of the Medicine, and when that is effected, the Medicine hath answer'd what should be expected from it; but whether benefit or mischief succeeds from purging, concerns not the Medicine, but the then state of his Body who took it.

VIII. And since it is by Experience only that we can be let into any knowledge of the real Powers, Efficacies, or Operations of natural Substances; it will be necessary for us heedfully to observe, what Medicines perform upon our Bodies, if ever we design to discover their Virtues; and not to fix our Opinions of their intrinsic Powers in curing some Diseases, because sometimes advantages have ensu'd upon their use. And had Men but strictly observ'd, and heedfully distinguish'd between what the Medicine really does, and the benefits that have sometimes ensu'd upon the operation, Medicine might have made some farther progress towards Certainty than it hath arriv'd at. And whether that so fashionable use of so much multiplying them, hath not been some hindrance to the discovery of their Virtues, I shall only offer as a consideration not unworthy

worthy the most improv'd Judgment. This I have often had in my thoughts, that of those large numbers that are sometimes in use at the same time, and in the same Person; Men must either aim at the same intention by them all, or not: If the former, to what purpose are they so multiply'd? If the latter, why are they given? For if of contrary Qualities or Powers, and so of differing Operations, they may only hinder and destroy each other, but do little service to the diseas'd. By this doubt that hath sometimes fluctuated upon my Mind, I would not have it thought as if I insinuated, that Medicines should be separately given, or that I condemn'd the use of Compositions; or that particular Symptoms are not sometimes to be mitigated by proper Remedies, especially when seated in different Fluids, as shall be shewn hereafter; but that I only propose it, as a matter worthy a strict enquiry; whether it is not more reasonable, in long and continu'd methods, to keep to such things that are of agreeable Operations, than so promiscuously to use a multitude, that manifestly appear to have very different Powers. It is highly probable, the general received Doctrine of certain Species of Diseases, gave birth to this usage: For whensoever the Diseased was afflicted with more Diseases than one (which generally was when some

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unusual Symptoms appear'd) it was but reasonable, according to the Doctrine, to multiply Medicines; that so each Disease might have its proper Remedy in such composition. And this Custom gradually increased to such a height, that the most enlarg'd Compositions were most valu'd, as being befitted for the cure of Diseases, in proportion to the number of its Ingredients. But if Diseases are only Faults, or Alterations in the Fluids, notwithstanding they may appear in different Parts, and differing Shapes, yet if they arise from the same Cause, they are to be remov'd by the same methods; and that Diseases really are so form'd, shall be demonstrated in the ensuing Discourse.

IX. But to return, what we call Medicines being only natural Substances, can only operate where they are; and if they communicate Effects, where they are not, it must be by the means of some other Substances that are contiguous to them, through which some of their parts must pass, or by which, some degrees or modifications of Motion must be continued, from them to the part where the Effect is made: This is so bright a Truth as not to be question'd, the very nature of particular Substances implying it. Now there being but two general sorts of Motion in a humane Body, although perhaps several subordinate ones, or degrees in both, *viz.* What I have called the *natural Motion*, as
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being common to all fluids ; and the *Animal one*, which is Organical, and proper only to Life : All the Effects then that we are capable to comprehend can be made by Medicine, must be perform'd by one of those two ways ; by reason, Medicines are suppos'd to make some Alterations ; and all such, in natural Bodies, necessarily require motion, and there is no other motions in a human Body, but these two recited. The first of these, *viz.* the natural motion, can never be conceiv'd to be alter'd by any substance, but by the immediate admixture of its Parts with the very component Parts of what is thus to be alter'd ; by reason that consisting in the motion of the minute Parts, separately consider'd ; that is, they continually moving among themselves, the Mass that they constitute, that is, all of them collectively taken, cannot be alter'd, but as the particular ones are, which will therefore necessarily require such an admixture. And there being but one common Passage, by which Medicines can come naturally to mingle with our Juices, that is, *the Fluids* ; and that Passage is by the Mouth, Stomach, and the several other narrow and slender Pipes that lead into the Blood ; and when they are receiv'd into the Blood, they must necessarily, by means of the Circulation, be mingl'd and confounded with the Blood, and so, of consequence, must first exert their

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Energies there. But the other, *viz. the Animal Motion*, may be affected immediately from the Medicine it self, without passing this tedious course by the Blood: As appears manifest by what may be observ'd by the effects produc'd by Emetic, or Cathartic, or Sternutatory Medicines, and also by the surprising effects of some Smells, some of which are experienc'd to suppress or hinder, others to cause or occasion Fits, and in divers other cases. And in truth, was not this motion capable of being immediately affected, it would be difficult to conceive, how Sensation could be perform'd in the manner Experience teaches, as it is. And this Animal motion being perform'd by the means of the organical Parts, which are consistent, that is, which cohere and are united, and yet are so divinely fashion'd, as to give passage to the nimble Instruments of this motion, the Spirits; it is readily propagated to Parts that are remote from that, where it was first caus'd or began.

X. By a due consideration of these things, which I take to be Truths, by reason they are only grounded upon Fact; or are deductions from such things as are manifest and certain, as will appear in the Discourse it self, I do apprehend it not marvellously difficult to foresee what Diseases may be remedy'd, that is, are within the reach of Medicine, and by what methods to be effected;

and what are absolutely beyond their Power; and what are as yet uncertain, that is, where Nature hath not as yet so far declared her self, as to give any Indications that she is to be reliev'd; neither hath she so clearly discover'd her Weakness, as that we may perceive it is not in our power to do it. But in these things I would not be mis-understood, for I intend only the Event of that Disease, and not the Life of the Person: Which things, if rightly weigh'd, will soon discover themselves to be widely different.

S E C T.

SECTION I.

CHAP. I.

I. **T**HERE needs, methinks, no better Proof of the doubtfulness and uncertainty of general Systems of Natural Philosophy, than the difference to be observ'd between them; for since there can be but one, either of Ancient or Modern, that can correspond to the real nature of things; and yet every one seems to be recommended as true resemblances of them; Men that will espouse one, that is, that will be so blindly led, to assent to the truth of Fact, because so taught in such speculative Fictions, will necessarily be plung'd in some difficulties in making their choice; by reason there being so many of them, and each represented as a Copy of Natural Beings, it cannot be readily determin'd which to confide in, when there appears so many promising Pretences, unless their several Excellencies be separately examin'd: And that is not to be done, but by one of these two ways, *viz.* Either by judging of the Truth of the System, by

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Vanity of Hypotheses.

the Symmetry and Harmony of its Parts; Or, by Experiments to learn, whether the several *Phænomena* of Nature conform to such Principles as are there taught. If Men will always judge of Discourses by the first, they will be irrecoverably lost in a Labyrinth of Uncertainties, without either Clue or Thread to guide them; for then there can be no *Criterion* whereby to distinguish between Fact and Fiction, Truth and Fable: For ingenious Men are rarely so unfruitful in Thought, or so barren in Invention, but that they can contrive and dress a Work with such endearing Ornaments, as are Symmetry in its Parts, Grace and Beauty in its Compositions, without being oblig'd to copy from any real Original: So that should others pretend to try the value of the Metal by that Touchstone, they may be unhappily brought to acknowledge the Metamorphosis of *Ovid* to be as real as the Books of *Moses*; the Visions of *Quevedo* to be as true as the Revelations of *St. John*. But if by the last, then they seem of no manner of use, by reason then they appeal from the Hypothesis, to the things themselves, to learn their Natures; and that may be as fairly done without any such precarious assistance. Besides, Experiments can give them no farther assurance of the truth of their beloved Opinions, than as they relate to such Substances upon which they are made;

made; and therefore, to establish the full Truth of such Doctrines, such must be multiply'd in proportion to these *Phænomena* they pretend to explain; which being as numerous as the parts of the Universe, renders the very attempt impracticable. It must be acknowledg'd, some Contrivers of these airy Doctrines have oblig'd their Readers, by bringing some Testimonies from things themselves, to prove their Conjectures; but then the numbers of such Witnesses are so scanty, in respect of that immense Ocean of beings that compose this vast System, (that they pretend to explain) and the choice of them so advantageously made, such only being produc'd, that can be smoothly explicated by their Principles; and their Evidence is usually so cunningly deliver'd, that they seem to an impartial Reason, rather to give an occasion to suspect, than any ways to confirm their Doctrines: For by such it appears too evident, that the Authors were more concern'd to find Proofs to support what they have thus contriv'd, or taken up as true, than sincerely by such, to enquire after Truth it self: For indeed, Men having once (whether wantonly, or unwarily, it matters not) establish'd a firm belief of the truth of an Hypothesis, there seems not much reason to expect they shou'd enquire farther, unless it be, that they may make it appear with the finer Grace or bet-

Vanity of Hypotheses.

ter Lustre. That the first Authors should be pleas'd with their own Chimeras, seems not unnatural; for who is not fond of his own Offspring? But that others should so willingly embrace them, and so warmly defend them, is indeed somewhat marvellous. For who could easily imagine, that a Rational Being could act so blindly, as thus implicitly to assent to the Conjectures of others (his Equals) being of the same Humanity, when employ'd about such things as he hath an opportunity of examining, without vouchsafing to examine, whether they agree to what they pretend to teach; and when this is often to be done (for it is obvious some of them do) by the means of such Principles as are never without a Revelation to be known. Thus Men out of a trifling distrust of their own Parts, will not use them, or out of laziness of Temper, will not employ them; chusing rather to be esteem'd Wise or Learned, by being adorned with others Whimsies, than undergo any Labour, Fatigue or Trouble of being really so. 'Tis true, the Mind of Man naturally desires Knowledge, for who is not fond of knowing? And when therefore it is once convinc'd of its being in ignorance, it eagerly covets it, because it then wants somewhat that appertains to its Perfection; for which reason, rather than to continue in such uneasiness, it becomes prone to be too easily satisfy'd with what is but thus

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speciously offer'd. From this reason, Men seem willing to sit down by an Hypothesis that smoothly promises a great deal of knowledge, with a very little toil; and having once thoroughly imbib'd this Opinion, they readily conclude, that all things really are, as they are-painted; that is, that the orderly and stupendous workings of Omnipotency, are the genuine exemplars of such wretched contrivances. This, methinks, is a kicking against our Maker, thus to slight our Reason, which he as a mark of his divine Favour hath given Man, to distinguish him from the rest of the Creation: For thus implicitly to assent, where we may examin, is to make that plainly useless. Besides, to do thus, methinks, tastes of Impiety; in that we seem to deifie a wretched Mortal, in attributing, in some degree, a kind of Omniscency to him; in esteeming him able to explain the Natures of all created Beings, and to as readily sit down by his *dixit*, as if God himself had spoke it; who, on the contrary, hath declar'd his ways are past finding out.

II. Besides, the Imperfections of our natural Faculties, and the narrowness of our Understandings, may reclaim us from such Vanities; our Knowledge being bounded to our Ideas, and our Ideas receiv'd from our Senses, and our Senses unable to discover the minute Instruments that Nature employs in

her ordinary Operations : For our Organs are fram'd out of divers and very different Substances, which, altho' all conjoin'd and united to constitute one individual Body, yet each hath a different and distinct use; for one part of this united Being perceives, thinks, understands, has a power to begin, alter or hinder motion; whilst the other Parts are only Instruments employ'd in transacting the several operations that appertain to this united Being. The active Part, that has a power of perception and self-motion, &c. is contain'd in the passive and groffer part, and so is excluded from all commerce with other Beings, but what is convey'd or receiv'd by these Instruments: For this active part, which we call the Mind (to distinguish it from the groffer parts, which we call the Body) has its residence in the Brain, from whence, by the means of certain Vessels, call'd Nerves, it communicates with the Body; and whensoever this communication is intercepted, the Uses of such Parts cease.

The Mind of Man being thus imprison'd in the Body, can have no communication with any parts of the Universe, but as such operate upon, or some way affect the Body; because the Body interposes between the Mind and Object: For which reason, the Mind cannot be inform'd of the nature, properties, or powers of such Existencies, that

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is, of what is without our Bodies, but by the help of the Nerves, or some part of the Body. And it is for this purpose that Nature hath wisely form'd several Inlets, *viz.* the Senses, by which the Mind may perceive the operations of such Substances upon us, and the perception of these operations, by the means of these passages, is call'd Sensation. So that the perception and knowledge of Bodies existing without ours, must be only a consequence of their operating upon, or affecting ours; which I think further appears,

1. In that when any Organ of Sense is choak'd up, or lost, we are by that excluded from any further perception or knowledge of such Qualities that are to be known by that Sense. And such as have naturally wanted a Sense, have no Ideas of such Qualities as are only gain'd by that Sense; thus a Man born blind has none of Colours.

2. In that all the Qualities, Properties or Powers of Body that we can form any Thought, Conception or Idea of, are only such as may be evidently gain'd by some of our Senses, as will clearly appear by a particular survey of them; which I think would be superfluous to particularize.

From these things I think it may be concluded, the Mind is not capacitated to discover the natures of particular Substances, really existing without our Bodies, in which
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it, *viz.* the Mind, is contain'd, but as it is inform'd from the Senses, upon which only such operating can be perceiv'd. For altho' it can view its own Ideas, and so perceive their agreement or disagreement; yet it cannot from that be ascertain'd, that such are the real Images of Beings actually existing without it; unless such Beings actually operate upon the Senses; because there is no connexion in nature, between our Thoughts and such Existences, the one not implying the other; so that when our Ideas are taken for resemblances of Substances really existing, we can never know whether they correspond and agree with what they are taken to represent, but as we are taught from our Senses; our Senses being the only Instruments the Almighty hath gave us for this purpose: So that to say our Senses may deceive us, is, in effect, to remove all the means we have of any Knowledge, and to cancel, indeed, the very *Criterion* by which we can judge of such things. It is not my purpose to meddle with the general nature of our Ideas, or their Originals; It is sufficient for what I aim at, that our Minds are finite, and condemn'd to a Residence in a determinate part of our Bodies, *viz.* in the Brain (as may be inferr'd, in that there is the origin of the Nerves, by whose means Sensation and Motion is perform'd, and in that whatever part is deny'd communica-

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tion with that, becomes senseless and motionless :) and are therefore, excluded from any immediate Commerce with external Existences ; unless such can immediately operate upon our Senses, and are perceiv'd from thence by the help of the Nerves ; and therefore it is not possible, the Mind should know whether those its Ideas, that are taken to be Images of such Corporeal Beings, do really resemble the Originals, unless it doth compare and examine them, by the help of the Senses, which are the only Instruments prepared for that Purpose. It is from this reason that whatsoever we perceive or know of the Natures or Powers of such Beings, their Actions, Efficacies or Operations, either upon our own or other Bodies, is and must be only from Experience : and then all our reasonings about such, if they carry any certainty with them, must be originally founded there ; so that for Men to look only into their own Minds, for the nature or uses of particular Substances, can be but trifling ; by reason, by what they can infer from thence, they can only shew how things should be, had they contriv'd or order'd them, but not how they now are, since God hath made them.

III. Furthermore particular Substances being for the most part known to us by their sensible or secondary Qualities (for they can only be known by us, by what appears to us) and from them they are ranked by us into Fa-

Qualities produced.

Families, Species or Sorts; and these Qualities proceeding from the mechanical Affections of the minute parts of Matter, and their several degrees and modifications of Motion, by which being impower'd to operate upon our Senses, such Perceptions in our Minds, which we call Qualities, are there produced; but by reason the minute parts of such Substances that perform this, are so very small, that their size or figure, their number, order or position, their several degrees or various modifications of Motion, cannot be immediately perceiv'd by us, we readily conclude, that these our Perceptions, or Ideas, which we call Qualities, are somewhat real in the Substance or Body it self; whereas these only flow from certain Powers in such Substances, and exist no where but in our Minds: However, these Powers of thus affecting us, and so giving us Ideas of Qualities, may be alter'd or destroy'd, but by changing the primary Affections of the Corpuscles, constituting such a Body, in which we consider them; as has been abundantly prov'd, by a multitude of Experiments, respecting most Qualities appertaining to every Sense. Secondary or Sensible Qualities, then being produc'd by these minute parts of Matter, which being so exceeding small, as not to be discover'd by our gross Faculties, it is plain, we can never directly fore-know what other Powers or Effects will succeed upon any change made
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among them, more than what we have observed hath formerly ensu'd by it : So that what we can know of such Things can be only gleanings from Observations. Thus having constantly observ'd that natural Bodies act regularly, we safely conclude they always will do so, and that the same Cause will always produce the same Effect.

IV. But perhaps it may be objected, that although this Truth must be acknowledged in most natural proceedings ; yet it admits of some Exceptions, and particularly in Physick, where daily Experience will abundantly convince us, that the same Effects do not succeed the use of the same Remedy, nor the same Events happen in the same Disease, but that all things may be observ'd so uncertain, as if Chance alone govern'd. To this may be answered, the Medicinal Operations are as regular and certain as other things ; and the only Reason why they have appear'd otherwise, hath not proceeded from any Uncertainty in their Operation ; but from certain mistakes in the considerations of Diseases, and from a sort of Negligence, in not distinguishing between the Operations of Medicines, and the Advantages or Mischiefs, that have succeeded to such Operations, *viz.* between what the Medicine does, and what the Nature of the Patient only can do. But that what I intend may be the better apprehended, I shall beg leave to illustrate it with a common Instance.

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There are some Preparations of Antimony, which will always create Vomiting, which is then, what I call their regular Operation; and by this sometimes a vitiated Stomach is recovered, which is but the uncertain Effect of that, by reason when the Stomach is depraved from a Cause, that cannot be remov'd by Vomiting, that Medicine cannot contribute to its recovery. Now the first of these only regards the Medicine, and Experience alone teaches us what its Operation is; but the second requires farther thought, in weighing and comparing the present Circumstances of the Diseased; and heedfully considering how far they can relate to the regular and known Operation of the Medicine, and from thence judging of its use.

V. But in order to render the things to be treated of in this Discourse, the more intelligible, it may not be improper to indulge the Humours of the Age, in setting out from some general Principles: But that this may not be Nauseous, I shall only briefly premise, That every natural Body, or particular Substance, is but an Heap or Aggregate of small, and singly imperceptible Parts or Particles; each of which, when consider'd by it self, will necessarily have some determinate *Size, Figure, Motion or Rest, inseparably appertaining to its Nature, as also some Position in relation to others*. The first part of this is prov'd by Experience, for take any lump or parcel of Matter, and
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it may be by some means or other so divided, and subdivided, that its parts singly become imperceptible. The second part is most evident from the undubitable nature of Quantity.

VI. Every particular Body must be conceived, and is always found in one or both of these two Catholic States or Conditions, *viz.* either *fluid* or *consistent*, by reason the Mind of Man cannot conceive, but the parts of Matter, must either be in motion or at rest; and I call that a *fluid*, whose parts are continually moving, gliding and slipping from each other, without union or cohesion, so in respect of each other, always changing place, as I think is manifest in Water, Wine and such things, by reason they presently part and divide, if not contain'd and kept together by some resisting Body; so likewise in that if we put any dissolvable Body, as Salt or Sugar, or such like, into any such Liquor, it will not only be divided into invisible parts, that is, will be dissolved by it, but will also be gradually scattered and diffused through the whole, as may be prov'd by the Taste; and this altho' the Vessel in which it is contain'd, is kept unmoved, by which it is certain the component parts must be moving. I call that a *consistent* Body, whose parts do mutually adhere, and are united, not leaving or parting from each other, so long as it remains in that State. As for *hard, soft, moist, dry, tough, brittle and such*

such like, although we are often apt to consider them as States of Body, yet they are in reality only Relations to us; thus we call a Substance hard, that will not give place to the pressure of our Fingers, or any other part of our Bodies soft, that readily will, &c. But if these are considered as Qualities or Conditions in the things themselves, they are only as the small constituent parts of Body, are more or less moved, or at rest, or some of them moving, whilst other rest with or without Union or Cohesion, as will readily be perceiv'd by any one, who will but give himself leisure impartially to consider these things.

VII. We may likewise observe a constant vicissitude and change among natural things; this or that *particular Substance or Qualities* beginning to exist; that is, some parts of pre-existent Matter, become cloath'd with new Qualities, and so acquire from us a new Denomination, and then we say such a thing is made, generated, or *de novo* produced. And again those Parts or Particles thus constituting such a Body, undergo another change, and then the Qualities that were observ'd in that are altered, and then that Body is said to be dissolv'd or destroy'd: And another by a new placing these Particles is again formed. Thus natural Bodies seem to move in a Circle, for Instance, that which was Earth one Day, is Grass the next, then the
Flesh

Flesh of an Animal, and then perhaps moulders into its primitive Earth. Besides, we observe particular Beings to grow and encrease, that is, they receive an addition of new Parts; by which their Bulks are enlarg'd without any alteration perceived by us, in such Qualities or Powers, that to us constitute them what they are; as is evident in the Animal and Vegetable Kingdom, such being esteem'd of the same Species when little or young, as they are when full grown. And it is certain, that an addition of new Parts to such Bodies, by which they grow, does necessarily imply a motion in the parts so added, or otherwise they could not now be where before they were not; and that such new Parts must have parted, or been remov'd from other parts, to which, before they were contiguous; and Motion without union and cohesion is what constitutes Fluidity.

VIII. It is most evident then from these Considerations, that every particular *natural Body*, that receives an addition to its *Bulk, Weight or Magnitude*, must have it by the means and help of a Fluid. This is most apparent among Animals and Vegetables, the last being immediately nourished by its Sap, the first by the Blood, or some Juice analogous to it, or separated from it. It is likewise most certain, that if the nourishment, growth and encrease of every particular Substance is by a Fluid, then their several alterations,

rations, diminutions, decays and dissolutions, must proceed from the same Cause, by reason these being Changes, necessarily imply a motion and disunion of Parts; and the several Alterations and Dissolutions of most Substances are conspicuously effected by Fluids, for such are visibly observ'd to break Prison, forcing, parting and dividing from the more firm and consistent Parts, (as every one may in a particular manner remark,) in the Corruptions, Putrefactions or Dissolutions of Plants and Animals. This being as I thought not improper to let us easily into the following Discourse; but that I might not be burthen some to my Reader, I have only briefly, and in the general touch'd at these things.

IX. But the main Design of this Essay being to explain the Natures, and shew the manner how Diseases are form'd, it will be necessary to premise somewhat of a Humane Body, the Subject in which they reside. But in doing this, it is not my Design to go about Anatomically to display the Organical Parts, that not being so material to my present Purpose: But I shall only consider it, as moulded and made of *Parts containing*, and *Parts contained*, or to express it in Terms more agreeable to what hath been already said, into *fluid and consistent Parts*, the former being always contained, or some ways kept in by the latter.

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X. It may, as I apprehend, be thought superfluous to go about prolixly to prove, that there are divers Fluids in a Humane Body, always existing, and easily to be discovered in it, as well as in most other of the larger Creatures. Because this I take to be so bright a Truth, that it requires no Proof; for he that will doubt of this, may with equal reason suspect whether the Sun is in our Hemisphere at Noon-day, or whether there is such a Body or not; for if Men will not acquiesce in the Evidence of their Senses in such things, there can be no cure for their Scepticism: For it is as obvious, there is such things we call Blood in our Veins, Saliva in our Mouths, Urine in our Bladders, Bile in our Galls, as even of the above-mention'd Body.

XI. Having then an undeniable assurance of the real Existency of several Fluids in our own as well as in other Animal Bodies, our next enquiry is to examine what we know of their Natures, Effects or Uses, and under what Names they are comprehended, and how to be distinguish'd. But that I may perform this without Confusion, it will be proper first to rank them into two sorts; which for distinction sake I shall call *common and appropriate*. I call that a *common Fluid* that is diffused, and may be discovered in most, if not in every Part or Member of the whole Body: I call that an *appropriate one*, that is

to be found in a particular part, and so is only proper to that. Of the *common Fluids* we may most apparently discern two kinds. The component Parts of the one are gross, and to our Senses immediately perceptible: The Parts of the other so very subtle and minute, as not of themselves to be perceiv'd, yet easily to be known, by their stupendious Effects, Uses and Operations. The first of these is well known by the name Blood; the latter is what passes in the Nerves, which according to the receiv'd Phrase of Speaking, I shall call Spirits. The first of these may for farther distinction be term'd the *primary common Fluid*, it being the *Source* from whence the second is separated, and so in Nature first, as likewise the Fountain from whence all the *appropriate* are deriv'd. The first of these is in a perpetual circulatory Motion, being incessantly impelled through its proper Conduits, the Arteries, into the farthest and remotest parts of the Body, and then by its own Vessels, or some invisible Passages it is receiv'd into the Veins, and by them returned to the Heart, from whence it had its impulse: So that there is not a part in the whole Man, where some Footsteps of this crimson Gore may not be perceived. The second, although not so immediately to be by it self discover'd; yet its Uses are so obvious, and its Effects so marvellous, that it leaves no room for doubt of its Existence. Because we find no entire Part
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or Member absolutely devoid of some Sense or Motion; not the remotest Surface of the whole Body, but from which we perceive, we feel, we are sensible of Pain, and have a power some way of moving; all which are demonstrative Proofs, that those subtle messengers of the Mind have a residence, or some communication there, by reason all Sensation and Motion are perform'd by 'em; as is evident, in that by hindring their motions, or some ways stopping their passage in the Nerve, and the Mind is immediately depriv'd of all communication with that Part, Sensation and Motion being there lost.

XII. There being so great a number of *appropriate Fluids*, or, if you please, particular Juices, to be met with in humane Bodies; I shall not be so tedious (the nature of this Discourse not requiring it) as singly to enumerate them, but shall only rank 'em under these following Heads.

First, Such as are merely *excrementitious*; by which I understand such Juices as being separated, are then uselefs and unnecessary to our Bodies, and are, for that reason, exterminated and discharg'd; some immediately by their proper *ductus's* adjoin'd or annex'd to their secretory Vessels; and others are convey'd from the Part where separated, to be deposited and retain'd in a particular Receptacle prepar'd for that end, until such time they may be more conveniently dis-

charg'd the Body. Of this sort is the Urine, which being fecern'd by the Kidnies, is repositied in the Bladder: Of the first is the Sweat, or what passes by the Pores of the Skin; what is excreted by the Nose, Eyes, or Ears; what is expectorated by Coughing. Of the last again, is what is separated into the lower Guts, to be, with what is contain'd in them, expell'd the Body by the common Passage of the *Anus*.

Under the second Head may be compris'd all such as are partly excluded the Body as *excrementitious*, and partly again return'd with the Alimentary Juice into the *common Fluid*, from whence they were separated. Among these kinds are to be numbred the *Saliva*, or the Juice flowing into the Mouth, separated by the Glands seated above the Head, Neck and Throat, part of which is swallow'd with what we eat and drink, and part often spit out; as likewise what is fecern'd by the Liver, *Pancreas*, and all other Juices that are fecern'd and pour'd into the upper parts of the Bowels, above the milky Veins; for some part of these being necessarily mingl'd with our ingested Aliments, must, in all likelihood, pass with the Chyle into the Blood, whilst other Parts will again descend with the gross parts of our Food, thro' the loathsom Channels of the Guts, to be expell'd from thence, as may be reasonably concluded from the observ'd difference
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in Humane Excrements, according as their descents are either open or hindred.

Under a third Head may be reckon'd such as (so far as they appear to us) are only separated, that they may be again return'd into the Blood from whence they were separated; some after they have made a long and comparatively slow Passage (for uses, without doubt, altho' unknown to us) are again with fresh Juices brought back into the Fluid, from whence they were parted; as the *Lympha* by the conglobate Glands, which passing by the Lymphæducts, is again mix'd with the Chyle: And some again seem only separated, as far as we learn, to be immediately remix'd with the Blood, as seems not improbable to be done by the Vessels constituting the Spleen.

Under a fourth Head may be accounted such as are only separated for the use of the very Part where secern'd. Belonging to this Head is what is contain'd in the Joints, the Humours of the Eyes, the Liquor in the *Pericardium*, and such like; for as for what goes to the repair and nourishment of the consistent organical Parts, I do not call that Secretion.

Under a fifth Head may be comprehended all particular Juices separated by the Organs, in either Sex subservient to Generation.

Different Fluids.

The Spirits likewise that are prepar'd by the Brain, are also separated from the Blood; but these being diffus'd thro' every Region of the Body, are treated as a *common Fluid*.

Thus, altho' our Bodies abound in such a multitude of distinct and appropriate Juices, and all these very different in their natures and uses, and befitted for very contrary ends, yet are they all separated from the same Blood; the Organs form'd for such Separations being so divinely contriv'd, and so curiously fashion'd, as out of one common Liquor to filtrate or separate so great a variety, most of which are very unlike in their sensible Qualities. And as it is from *one* from whence so many are deriv'd; so it is by one only Passage by which that *common Fluid* is supply'd, which is the source from whence the rest are strain'd; whereby to repair all the Consumptions it continually sustains. For the Blood is not only wasted by these appropriate Juices, that thus incessantly drain from it; but also in the nourishing and continually repairing the organical and consistent Parts; for some of these likewise are so loosely compos'd, as to undergo frequent alterations; as is manifest, in that Flesh sometimes consumes and waists, and at other times grows and increases: However, such Parts being by Nature condemn'd to and settled in certain and fix'd abodes, from whence they are not to be remov'd; altho'

altho' they may sometimes undergo changes, and so become incident to Infirmities and Diseases; yet being incapable of receiving any advantages from Medicines, but as they are convey'd by the Blood; and the Blood being equally whirl'd about in Circulation to every part of the Body, in proportion to the capacity of its Conduit, can naturally no more respect one Part than another: So that if the Diseases, or Faults of the organical Parts, are to be mended or cur'd by internal Medicines, that must be effected by the means of the Blood; because there is no other ways whereby they can arrive at them: And the Blood being only passive in Circulation, hath no power to dispose of Medicines more to one part than another; so that such must, in proportion to the Blood, be equally distributed to every part of the Body. And this consideration shews the vanity of appropriating particular Drugs to particular Parts, and the lenity of considering Diseases in the Solids; since if such were diseas'd, they could be internally remedy'd no other way, than by the Fluids.

C H A P. II.

HAVING already observ'd, what a variety of Fluids are naturally contain'd in a Humane Body ; before I descend to treat of them in particular, it may not be improper to premise somewhat of their Natures in general.

II. It is certain, the Fluidity of Substances is not founded in any size or shape of the constituent Particles, but purely and only in their continu'd motion ; by reason Bodies are not denominatèd Fluids from any Qualities, Powers or Operations, but from the continu'd motion, and want of union of their Parts : For whensoever that motion ceases, and the Particles unite, or adhere, they lose that denomination. This continu'd motion of the Particles of a Fluid, must naturally produce a variety of changes and alterations in the Qualities of such Fluids, that consist of Particles different in size, unlike in figure, and unequal in motion ; because Particles that bear no similitude to each other, promiscuously moving and roving, must necessarily, by reason of their unlikeness, meet, strike, jostle and
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hinder each other; by which their motions or determinations being alter'd, the positions and habitudes they bear to each other change, and of consequence, the Qualities, that are only the effects of such habitudes and positions. It is from this reason, that all Juices express'd from Plants or Fruits, all strong Infusions, all new Worts or Beer, all Syders, Perry and new Wines, which plainly, even to the naked Eye, betray the diversity of their parts, manifestly, altho' gradually, change all their Qualities; for from being turbid and opacous, they become clear and transparent; from being sweet and nauseous, they grow pleasant and delicious; from being flat and heavy, they arise to be light and spirituous: However, they evidently alter (altho' not always to the pleasure and advantage of our Senses) in all their Qualities.

Whereas Fluids, consisting of homogeneous and uniform Parts, cannot undergo such changes, by reason, notwithstanding such Particles continually move and change places, yet being equal and uniform, that motion produces no sensible variation in the texture of the Liquor: And from hence it is, that the more uniform and homogeneous the Parts of a Fluid are, the longer it continues without a sensible alteration in its Qualities; as may be observ'd in Quicksilver, in divers distill'd Oils, Waters, Spirits, &c.
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in Wines, Beers, and all strong Liquors, after they are perfectly fined.

III. This Consideration of the intestine Motion of the Particles of all *Fluids*, will easily let us into the Mystery of that Action or Operation of Liquors that is termed their Fermentation, (for that Term is used to denote some as yet unexplained Power, that is suppos'd to reside in some Liquors, by which they alter their Natures, and for the most part defalcate and refine themselves); which, in truth, appears to be no more than what in plain *English* we call, *the working of the Liquor*; and all such Liquors that are experienc'd to have a tendency to alter their *Qualities* are termed *fermentative Liquors*: But altho' the Word is orderly confined to signifie such Liquors only as are daily observed to undergo Changes, *viz.* such as *Beer, Ale, Syder, some Wines, &c.* yet it is plain, it may with equal reason be extended to all Liquors that are not entirely *uniform* and *homogeneous*, by reason all such are prepar'd to undergo the same or like changes, altho' not being so much in use, they are not so much observ'd; for that Action, or Operation, that in the above-recited Liquors we dignifie with the Title of *Fermentation*, is not any thing different or distinct from that motion that is inseparable from the Particles of all *Fluids*; but is really that very motion, which only acquires this new denomi-

denomination, when it becomes visible ; for by the means of this motion, such Parts in Liquors that have the same tendency, the same size, the same figure, must necessarily congregate and herd together, because they agree in every thing ; whilst others in the same Liquor , that are neither under the same degrees of motion, nor have the same determinations, nor the like magnitudes nor shapes, must as naturally be drove out and expell'd, because they thus differ in every thing. And as this intestine motion in such heterogeneous Liquors is term'd their *Fermentation* ; so the effect of this motion in the same Liquors, is call'd their *despumation* ; and this despumation, which is only the separation or expulsion of the gross, unlike and disagreeable Parts, always may be observ'd to succeed, according to the different degrees of motion in the minute parts of the Liquors.

Such Fluids, who by reason of the briskness of the motion of their minute Parts do usually, in no very long time, refine or despume themselves , do very frequently acquire a manifest degree of Heat ; which gradually vanishes as the Liquor fines, but may be continu'd by a frequent affusion of fresh unrefined Liquor : And this Observation perhaps may yield us no improbable Hints, for the natural Reason of the continuance of that Warmth that is congenite to the Blood of Animals. However, waving that, I am
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inclin'd to think, from a due consideration of the certain nature of fluidity, and from Observations made upon several particular Bodies, that there are but few Liquors, but will sooner or later undergo some change, by the means of this motion; that is, but will throw off some Parts that are not precisely uniform, and thereby undergo changes in their Qualities: I say not all, because Quicksilver, and some Bodies drawn by distillation, seem to admit of an exception. The purest Water will, if kept, plainly discover some dissimilar Particles lurking in its Chrystalline Bosom; which, before they can be entirely divorc'd, will so taint and stain that harmless and virgin Liquor, as to make it loathsome to the Smell, and ungrateful to the Palate: It is true, these changes in Liquors consisting of most uniform Parts, appear, comparatively, so very inconsiderable, as to pass often unobserv'd.

IV. It may, perhaps, be thought, that what I have here said of the general nature of Fluids can be to little purpose, since I have already declar'd, that the principal design of this Discourse, is to enquire into the nature of Diseases; which can relate to such only that are contain'd in our own Bodies, which are widely different in most of their Qualities, not only from those I have instanced in, but from all others that exist without an animated Body; and especially, when

have already prov'd, That we have no means whereby to learn the natures of particular Substances, but by applying our selves to such for our information. To which I answer, That altho' I acknowledge, we can have no certainty of the natures of corporeal Beings (without revelation), but as we are taught from them, who are only able to reveal their own natures; yet Analogy, in such things that are without the reach of our Senses, is the only means we have to regulate our Guesſes: And in the present case, I have only us'd Instances for such kinds, as merely respect that part only of the nature of Fluids, which is common to all such as are seated in our Bodies, as well as such as are without it; for as to other Qualities, Powers, Efficacies, Actions or Operations, which are many and great, where there appears no agreement, I pretend not by such, so much as to illustrate.

V. But the better to explain what I here intend, it will be convenient to remind my Reader, of what I have already prov'd, *viz.* That there is always contain'd in the Body of Man, common and appropriate Juices; and that of the first of these there are two sorts, *viz.* Blood and Spirits; and that the Blood is the source from whence not only all the appropriate, but even the Spirits are separated. In order then to shew, that what hath been here said is applicable to what I de-

design, it is incumbent upon me to prove, that the Fluids within us, do in some things agree with those without us; and that the Blood, like some of them, is compounded and made up of very differing, dissimilar and unlike Parts, and therefore is naturally fermenting; that is, endeavouring, by the intestine motion of its minute Parts, to purify and despume it self; that is, the homogeneous and uniform Parts, do naturally tend to congregate and come together, and by that repel and drive out the heterogeneous and unlike: Which will appear several ways.

1. In that it is daily made, and continually supply'd, by particular Substances we eat and drink, which partake of very different Qualities.

2. By the great variety of proper Juices separated from it.

3. By its yielding Nourishment mediately or immediately, to so many unlike consistent Parts.

4. And certainly from the immediate consideration of it, when drawn out of its own Vessels, and nakedly expos'd to our examination; for then it soon so far discloses its nature, as to discover to the unassisted Eye, that it consists of parts that are not uniform, or homogeneous, by reason some of them readily part, and plainly disclose their unlike Qualities in different Colours and Consistencies.

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And as the Blood is compounded of dissimilar Parts, so it is naturally warm, and this Heat may be encreas'd by such Substances, as being receiv'd into the Stomach, do from thence pass into the Blood: I need not produce many Instances to confirm what every Mans Experience will teach him, that strong and virious Liquors will warm. And as the Blood may be præternaturally heated by what we Eat and Drink; so it seems not altogether improbable, but that its natural Heat may be preserv'd that way: And what seems to confirm this Conjecture is, that its Heat by Abstinence is usually abated.

However this is certain, as the Blood is compounded of very differing parts; so it is always, by the help of the Secretory Vessels, Purging and Purifying it self.

For notwithstanding some of the Separations made from the Blood, are really necessary to the Life of the Animal; as appears particularly evident by the Secretion of Spirits made by the Brain: Yet if we consider the Blood as a natural Substance, and so acting by the same Laws, as other natural Beings do; we must conclude that all such Separations do proceed from the mechanical Affections of the Blood; and are therefore thrown out of the Mass by the help of these Vessels, because they are not Homogenous to it: So that the Blood really Fines and Purifies it self; (in the Sense before laid down) notwithstanding

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ing the Life of the Animal could not be continu'd, unless the Blood did make these Separations, as shall be more fully prov'd hereafter. By these Observations it appears, that the Blood agrees with other Fluids of dissimilar Parts, in that like some of them it heats, and like all of them, it Purges, Purifies or Fines it self: That is, that it naturally parts, separates, or divides from some disagreeing Parts by the means of the Secretory Vessels. But in the continuance and manner of doing this, it differs extremely from other Fluids; for its native heat is as lasting as the Animal Life (although not always equal) and its Despumation is by the Secretory Vessels; because not being like other Liquors, left to its self to proceed in its own way; by reason it is perpetually whirled about by the circulatory Motion; nor not being contain'd in Vessels capacious enough to fine it self as they do, it can only perform it by these Vessels. As to what perhaps may be made an Objection by some, that Heat is not essential to Life, nor to the Blood, or at least, to that Juice that is analogous to Blood; as appears by what we may observe in exsanguine Creatures, seems to me to carry no Weight; for Heat, if consider'd as a sensible Quality, only bears a relation to our Senses; but if consider'd Physically in the Subject, is only Motion, so that no Fluid can be absolutely cold (that is) deprived of all internal Motion.

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Besides, we may observe several Liquors to fine themselves, where there is no perception of Heat; and where they are contain'd but in small quantity, it is seldom felt.

C H A P. III.

HHealth, the more I consider it, the less I understand to define it, which brings into my Mind, that saying of one of the Fathers, although spoke upon a very different Occasion, *si nemo ex me quærat, scio; si quærenti explicare velim, nescio*; every ones Experience will inform him what Health is; and his Complaints will declare to others what it is not; something it is, that we always lament when we want, and yet do not value when we enjoy: In its absence it is prized as the greatest of Blessings; valued as a Heaven here below, or an earthly Paradise; without it even Life is contemned and Death desired, because to live then is but Pain, and to move is but Misery.

II. Sicknes or Diseases are but the reverse to Health, and are only some unnatural changes in the Body of Man; for when a Man is sick, Diseased, Disorder'd, in Pain, or any ways ill Affected, it is certain he is alter'd and chang'd from what he was in Health,

because he is not then, as he was before ; and all Changes and Alterations whether in our own, or in other Bodies, if naturally perform'd, are by Fluids, by reason a consistent Body as such, must unalterably remain in a settled State, untill it is alter'd or shelter'd by a *Fluid*.

III. But because there is a variety of *Fluids* in a Humane Body, there may be some difficulty to discover in which Diseases lodge, unless we first enquire into their Natures. It is certain, some Diseases are as diffusive as our Bodies, there being no part that is exempt from their Tyranny ; and such therefore require a Subject as extensive, and are therefore deriv'd from one of the *common Fluids* ; whilst others are of a narrowwise compass, being limited to a particular Region, and so are either produc'd by some preternatural Separation deposited in such a Part, or by some Fault in an appropriate Juice. However, since all Juices, whether Natural or Preternatural, are deriv'd from the Blood, it will be proper first to treat of the Blood, as being in Nature prior, before I examine into them.

IV. But by reason the other *common Fluid*, the *Spirits*, seem to be diffused equally throughout the whole Man, there may be some difficulty to discover from which of these two, some of these general Diseases do proceed : Unless we can first establish a Criterion, whereby to distinguish between them.

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To do this we must have recourse to Experience and Observations, for it is from them only, we can be inform'd. And by them we are plainly taught that all *Natural and Preternatural Separations*, the repair of all the *solid and consistent Parts*, all *Natural and Preternatural Heat*, are some ways derived from or appertain to the Blood: And that the *Spirits* are the only Instruments of *all Sensation and Organical Motion*. These are Truths now so universally known, that I think it superfluous to go about proluxly to prove them: Wherefore I shall only briefly offer out these two general Observations, first if the Blood be but hindred from passing into any particular Part, all those above-named Effects which I have observ'd to be derived from the Blood, will be there entirely destroy'd: And if the passage of the Spirits into a Member is but intercepted, their proper Offices of *Sensation and Organical Motion* are immediately lost.

Wherefore the different Functions and Uses of Blood and Spirits thus known, it cannot be difficult to discern in which such Diseases lodge: Because Diseases themselves only appear by some one Fault or perversion in our natural Functions; and the Functions appertaining to each Part, being distinguish'd, in what parts Diseases reside, may be without much difficulty known.

Diseases how known.

V. But first of the Blood, which hath been already shew'd to be compounded of different and unlike Parts, to be the Fountain from whence the other Juices are deriv'd, to have two kinds of Motion, and to be contain'd in its own proper Vessels. It remains now, that we enquire what further is to be known of the Nature and Uses of the Blood, so long as it was in our Veins) before we treat of its Diseases.

It is very evident, so long as all the *Parts* of our Bodies, regularly perform their several *Offices, Functions* and *Operations*, so long we enjoy an absolute and entire *Health*. *Health* being only a Term to signify the joint performance of the Duty of every *Part*, for the benefit and safety of the whole; for whensoever the *Uses or Functions of the Parts*, are impair'd or injur'd, the Body is said to be *Sick*; and whensoever entirely destroy'd, *Dead*. And as all *Parts* of the Body conspire and co-operate in their several ways, for the Good of the whole, so any part failing in its Duty, the whole suffers; however the Part that is deficient, is only said to be Diseased. But notwithstanding every part of our Bodies hath its proper Use, yet all are not equally useful for continuing Life to the whole. The Blood is a part so entirely useful, that Life cannot be continu'd without it, and whensoever this necessary Portion of our Bodies alters and fails in its Offices, our Healths

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immediately impair. But notwithstanding the Health of our Bodies thus suffers by the Fault of the Blood, yet that faultiness appears only to us, by the means of its Functions and Uses; whensoever then the Blood rightly performs all its Offices, it is certain the Blood then is Good, because the Man is well; the goodness of the Blood being only a Relation to the Health of the Man. This Consideration methinks alone, shews the vanity of that usage of judging of the purity or goodness of the Blood, by its Colour, Taste or Consistency after Venesection, because then the Relation between that Blood and the Man is ceased: For notwithstanding we may judge of the goodness of the Blood by the Health of the Man, yet we cannot of the Health of the Man, by the means of his detracted Blood.

The Diseases of the Blood appear by the vices and faults of its *Functions, Uses and Operations*; for the Blood it self is contain'd and included in its own proper Vessels, and they are buried and cover'd with the common Teguments of the Body; so that these Vessels and Coverings interposing, exclude us from any immediate knowledge of this Fluid, so long as it is thus contain'd, unless what can be communicated by the means of such Vessels and Coverings, which can be but small, by reason such interposing *Parts are cross'd and opacous*, and are only Subject to

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the examination of *one Sense*, viz. *That of Touching or Feeling*; wherefore all the knowledge we can obtain, of the State or Qualities of the Blood, during its continuance in our Veins, only extend to such things as are discoverable by this Sense; and that can only relate to the two differing Motions of the Blood, the one of which is discern'd by the Pulse, the other by the Heat. For it is evident there is nothing else whilst it is in our Bodies, that can directly fall under our Examination. But then the straineries continually filtrating Juice from the Blood; some of which being discharg'd out of the Body, do immediately fall under the knowledge of some other of our Senses; so that by observing, weighing and comparing these Juices in the different States of a Humane Body, we can from thence learn, when they are natural and just, and when not; that is, how they are when a Body is in perfect Health, and how they alter when Sick or Indisposed, and the great variety of Changes they undergo, according to the Nature, or Degrees of the Indisposition: It is only by these two ways we can acquire any immediate knowledge of the State or Condition of the Blood; so long I understand as it is contain'd in our Bodies, and so long only it is the Subject of our Consideration: For as to what is obtain'd by the information of the Diseased, I shall shew hereafter, how little regard can
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safely be had to it. And in the due observing, considering, weighing and comparing these two things, *viz. the Motions of the Blood, discover'd by our Fingers; and its Separations by our other Faculties;* how they are in that State we call Natural and Healthful, with how they are in an unnatural and unhealthy one; with the several Circumstances attending these, consists all the knowledge we can have of the Blood, and all the Changes or Diseases seated there. I would not be mis-understood, I do not affirm it of all Diseases incident to the Body of Man, but of such only as immediately relate to the Blood.

VI. But here perhaps it may not be improper to obviate an Objection that may be made, *viz. That altho' it hath been prov'd, that there is a motion amongst the minute Parts of a Fluid; and that there is such an one in the Blood it self, after the Circulation is ceas'd, and that therefore it is reasonable to conclude, that there is such an one during the Circulation; yet that hath not been particularly prov'd.* To remove then all pretences to such an Objection, I shall directly shew there is such a Motion, three several ways.

First, By its Heat.

Secondly, By its inequality in Separation.

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Blood's natural Motion.

And thirdly, and more immediately, from the consideration of it when flowing out of its own Vessels, and receiv'd into another.

It is certain, our Blood, whilst it runs in our Veins, is always warm; and it is as certain, that Heat is only Motion; Bodies being hot or cold, as their Particles are more or less moved; and the Blood being warm, its Particles must therefore be in motion.

By the second it is evident, because the ordinary Secretions, neither regularly answer to the Quantities or Qualities of what we eat or drink, nor to the degrees of Motion in the Circulation, and therefore cannot directly depend upon either; and if therefore not upon these, they naturally must upon some Motion of the Parts, because no alterations can be conceiv'd in a natural Substance, but by some Motion.

By the third this Motion appears, even *ad oculum*; because, in emission, it streams out in divided parts, and the uniform and homogeneous run together, which they could not do without Motion; and this Motion, either must have been antecedently in them, or must have been acquir'd by their emission: but it could not be the last, because by that they lose their Motion, in that they grow cold, and therefore must have been in them while running in our Veins.

These Observations, I think, make it manifest, that there is, *de facto*, a Motion amongst

amongst the parts of the Blood, different and distinct from that of the Circulation.

VII. These things thus premis'd, I think it will follow, so long as the Blood in Circulation is whirl'd about in its proper Conduits, by an equal and natural Motion to all Parts of the whole Body: And so long as it is by a gentle and easie agitation of its minute Parts, so dispos'd to supply the several Vessels adapted for Separation, with their particular Juices, and all others, with Nourishment; so long I think the secretory Vessels will perform their Offices, and the solid Parts will be repair'd: And so long as these are thus regularly perform'd, so long, I apprehend, there can be no discernible alterations in the Blood, and, of consequence, no Disease to be observ'd there.

C H A P.

C H A P. IV.

HAVING thus taken a short and general view of the Blood, and consider'd it so far only as we are able, by the help of our Faculties, to attain any knowledge of its Nature, State or Use; and having also prov'd, That all we can discover of it, consists, either in the Motions of it, and their effects, or by the separations from it; and that the former of these is only by the means of the consistent Parts, it being contain'd in them: And that there being nothing else that any ways appertains to it (I mean so long as it runs in our Veins, and so long only it is the Subject of our Enquiry) that can fall under the Examination of our Faculties. That therefore all the knowledge that we can obtain of the State or Condition of the Blood, consists only in a judicious weighing and comparing these. For notwithstanding it is most certain, that not only the Blood, but all other Substances have some real internal Constitution, upon which the sensible Qualities depend; which therefore may not improperly be term'd their real Essence; because it is by this Substances are
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really distinguish'd from each other: Yet since this internal Constitution or Essence, can never be discover'd by our Faculties; it is plain, it is only from the Qualities we distinguish and know Substances.

II. Diseases, as it hath already been shewn, are only some Vices, Faults or Alterations in the Actions, Functions, Uses or Operations of the Parts of our Body; and although these plainly shew the Parts themselves are alter'd, yet such alterations in the Parts are not to be known but by these. The several Appearances of these Vices, Faults or Alterations, are term'd Symptoms: And thus, as those Signs and Appearances which distinguish Sickness from Health are term'd Symptoms, so what distinguishes Sickness from Sickness, or Disease from Disease, are likewise these Symptoms; because there is nothing else that fall under the cognizance of our Faculties, whereby we can distinguish them.

And as from the Symptoms Diseases are distinguish'd and known, so, by the help of the same Symptoms, they are rank'd into Kinds, and dignify'd with special Names; and have hitherto, according to the *Peripatetic Doctrine*, been treated as if they were endu'd with one common or specific Essences. However, in that a variety of Symptoms do sometimes appear in the same Body; these usually have been comprehended
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under one common Name, and so have been conjointly treated, as constituting one Disease. And these Species, or Kinds of Diseases, being only form'd by the observing the co-existency of some Symptoms; which being, according to the Doctrine of the Schools, suppos'd to flow from some common Essence, are therefore comprehended under one Name, and treated as one Disease. But by reason the same Symptoms do not always regularly co-exist, the Species of the Disease hath sometimes been disputed: For the Species being only to be known by the Symptoms (there being nothing else whereby to do it) and the co-existing Symptoms frequently disagreeing; it is evident, the Species must be doubtful, when the Signs are so by which it is to be known. And this so frequently happens, (that either from the *Age, Sex, Temper, Complexion, or from the custom or manner of Living, the differing Climes, Countries, Seasons, &c.*) that it is rare to observe two Persons that labour under what is esteem'd the same Disease, that have precisely the same Symptoms; and therefore it can be no wonder that Men sometimes wrangle about Diseases, when the very Methods of knowing them are so uncertain. But notwithstanding this uncertainty, there being some Symptoms that are observ'd much more frequently than others; such there-
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fore are often collected, and made the *Pathognomonic Signs of some Diseases*; and where this is done, in whomsoever such Symptoms appear, they are said to be affected with such a Disease: But such Symptoms that are thus made the true Signs of such Diseases, very rarely appearing by themselves, but are for the most part accompany'd with others, which are in divers Bodies different: wherefore, as some expedient for this difficulty, Men have branch'd such Diseases into subordinate Kinds: Thus, for Example, The Word *Fever* was formerly us'd to denote a preternatural Heat; but because that Heat was observ'd to have divers Adjuncts in different Persons, therefore that Disease was distributed into several Kinds, *viz.* into *Pestilential, Malignant, Putrid, Hectic, &c.* And yet this Division was no Cure for the Evil; for the Symptoms selected to distinguish these subordinate Species, were liable to the very same Misfortunes they were invented to remove.

III. It is true, this great uncertainty seems more particularly to relate to such Diseases as were thought common to the whole Body, by which I think were formerly understood, such as were seated in the Blood and Humours, as then phrased; for as for those in the *particular Parts*, there was not always the same reason, because in such, there was not place for so great a variety of Symptoms to asso-

associate. However, from this great Uncertainty in the forming Diseases, the reason seems manifest, why new Diseases like new Stars, have lately appear'd in our Horizon, *viz.* because some Symptoms have been observ'd to coexist, that were not formerly compriz'd under one single Term, that have lately been honoured with one common Name, and so come to be treated as one Disease. This I take to be evident in those now so common Diseases, the one to Men, and the other to Children, *viz.* the Scurvy and Rickets. For although it doth not appear by the Writings of the Moderns, that they have been exactly nice in enumerating or determining, which or how many Symptoms, nor whether inclusive or exclusive to others, must go to make these new Species: Yet they have but by loosely combining some, constituted Diseases that do not appear to be known to the Ancients under any one single Denomination. Not but that these Symptoms now compris'd under the Word Scurvy in Men, and those under the Term Rickets in Children, did sometimes formerly co-exist, although not then being expressed by a single Word, were not treated as a particular Disease.

IV. These Misfortunes concerning Diseases, seem in great Measure to be deriv'd from the Learning of the Schools; by which all things were consider'd as either *Substances* or

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Accidents; and the manner of treating Diseases being to be accommodated to that Form, Diseases themselves were to be consider'd in the nature of Substances, and Symptoms as Accidents: but because the naked Substance, or Essence, was not to be discern'd; therefore recourse was always had to the Accident, or Symptom, to learn the Species of the Disease; and this must necessarily introduce uncertainty, by reason it was of the declar'd nature of an Accident, *vel adesse vel abesse sine subjecti interitu*; so that, according to that Doctrine, a Disease might remain, altho' the Symptoms alter'd; and yet the Disease was not to be known but by the Symptoms. But a further Misfortune arose from that Philosophy, in that some Symptoms were thought to be so proper to some Diseases, that wheresoever such appear'd, such Diseases were suppos'd to be present; by which means Mens Minds were frequently perplex'd with the Notion of Complications, and their Measures in Practice confounded, in that Persons so affected were esteem'd to labour under different Diseases. And notwithstanding some Mens generous Pains have, in this last Age, dispers'd those Clouds of Darkness arising from that Philosophy, (which had so universally jaded Mens Understandings) in that part of it that relates to the explaining the *Phænomena* of Nature by the Peripapetic Principles; yet the Logical

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cal Part flourishes in a general esteem; and that notwithstanding the very treating of things under certain and distinct Species, naturally implies *Specific Essences*, which are but *Substantial Forms*, which are generally exploded.

Besides, there are other Mischiefs in Physic, that seem to me to have proceeded from this Doctrine; for it is probable, 'tis to this we owe that unlucky use of Receipts, which some, not unthinking Men, are so fondly wedded to, and to which so many others so obstinately adhere. And since that Philosophy has declin'd in that marvellous Esteem it once had, and most Men that have turned their Studies to Physic, have apply'd themselves to Chymistry; forcing, by that, particular Substances to pass their fiery Trials, in order to confess their Natures; concluding, because by thus analysing them, they may be often reduc'd into such Parts, that have some Qualities common to most (altho' they differ in many more) that these must be first Principles, out of which all Bodies were made, and into which all may be resolv'd. Whereas, it may be observ'd, that those very Substances, that being by this Art extracted from Natural Bodies, and are call'd their Principles, *viz.* their *Salt, Sulphur* or *Mercury*, or what have been by some further enlarg'd to *five*, are so far from being the same, or indeed homogeneous; as agreeing
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with one another, that they are in several Qualities extremely different; as is notorious by the great variety of *Oils, Salts and Spirits*, drawn from different Bodies. Nay, to shew how far they are from being first Principles, which should be in their Natures unalterable, it is not difficult to farther analyze 'em, and so to change them into other Substances, that being endow'd with differing Qualities, may with as much propriety be call'd Principles, as the former. But it is not my purpose particularly to enquire into these Doctrines, nor how far the Production or Extraction of one Body out of another, is a Proof that it was formerly Pre-existent in it. But Diseases existing within us, and so not to be examin'd by any fiery Tortures, which is the only means whereby Bodies are analysed into these Principles; it is impossible to judge of them by those that are not to be known, until thus divided; and are not to be divided, so long as they can be of any use for that end to be known: So that to ascribe Diseases to the predominancy of this or that unknown Principle, can contribute but little to the discovery of the knowledge of them. There hath been advanc'd another Doctrine of much a narrower compass than either of the former; by which Men have endeavour'd to explain the nature of Diseases by sensible Qualities, feigning Acids and Alcalis, to be the principal Instruments

of all Changes in Humane Bodies ; but these being Relations to our Senses, if they shou'd formally exist in our Bloods, yet are not to be discover'd there. But of this hereafter.

V. But to return : Those very Diseases that have been ascrib'd to a particular Organical part, and so, as it may be thought not incident to so many uncertainties, will, if impartially consider'd, not always be found exempt from them ; for altho' some of these are denominated from the very Part affected, as what by the *Greeks* is call'd *Pleuritis*, and so is denoted a Pain of that Membrane call'd the *Pleura* ; yet every such Pain is not esteem'd a *Pleurisie* ; that is, Physicians do not always treat such as the same Disease, by pursuing the same methods of Cure : The same may be observ'd by what we call *Arthritis* ; for notwithstanding Affections of the Joints of Hands or Feet are so call'd, yet, it is plain, they are not all to be treated in the same Methods : The same may be instanc'd in the *Cholic*. By all which it is apparent, there is somewhat more than what is call'd the Diagnostic taken in to constitute the Disease. Again, some Diseases are nam'd from the violence or manner of seizure, as *Apoplexia*, *Epilepsia*, and such like ; yet every loss of Sense and voluntary Motion is not Apoplexy, nor every loss of Sense, but not Motion, is not an Epilepsie. Some again, from their manner of affecting,

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as Rheumatisms ; yet all Pains with Fluxion will not be allow'd Rheumatisms ; that is, Men will not pursue the same Methods in cure. But these Instances are sufficient to give us some light, that even in these Diseases, Men are not always fully agreed what it is that really constitutes them. And it will clearly appear, to any unprejudic'd Man that will but diligently weigh these things, that ordinarily when the Enquiry is about the Disease, there is no more requir'd by it than the Greek, or perhaps sometimes the Latin Word, signifying a principal Symptom, the Part affected, the manner of affecting, or what hath been taken for the efficient Cause ; by the hearing of which Name we are not advanc'd one tittle in the knowledge of the nature of the Disease, or its Remedy ; yet that being heard, Men seem satisfy'd, so easily are most pleas'd with Exotic or Hard Words.

VI. There is one thing wherein this Age does seem to out-do Antiquity, and that is, in that Diseases that are specificated from the Part affected, are, by an unheard of impropriety of Speech, transferr'd to others ; for Example, How frequently do Men say the Gout in the Head, Stomach, and so forth ? Now the *English* Word *Gout*, being taken to answer to the *Greek Arthritis*, which implies an affection of the Joints ; to express then this in plain *English*, we must say, the Joints

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are affected in the Head, Stomach, &c. We may with equal propriety say, the Stone of the Bladder in the Head; and so of others, as the Cholic in the Stomach. It is true, this alters not the nature of things, but it destroys the very end of Language, thus wantonly and unnecessarily to use Words in such opposite Significations; and may often mislead unexperienc'd Men, who are too apt to be govern'd by them.

VII. These things thus premis'd, of the ancient uncertainty of distinguishing Diseases, and reducing and combining several Symptoms together, in order to form particular Species of Diseases; it is time to return to the Blood, from whence this digression of the common receiv'd Opinions of Diseases and their Causes, have led me. It hath been prov'd, That it is a Fluid, compounded of very different and unlike Parts; that it is constantly moving, hourly separating, and daily receiving fresh supplies: but as to any of its Properties, Powers, secondary or sensible Qualities, it being so included in the consistent Organical Parts, that it cannot immediately operate upon us; we must, as I suppose, without revelation, for ever remain in a settled ignorance. But there being several Symptoms complain'd of in the Body of Man, that seem to be deriv'd from some change in the Blood, which cannot be discover'd by either of the two formerly

merly mention'd ways, I mean, its *motions*, or its *separations*; it will behove me to examine, What they are, and how they can be affected: For these consisting in such Affections as are not outwardly to be discover'd by us, can be only learnt from the information of the Diseased; and may, as I think, be comprehended under what we call either Pains, Sickness, Uneasiness, Faintings, or Weakness; and their several degrees; these I take to be the principal Symptoms that may be some way caus'd by the Blood, and can only be taken from the Mouth of the affected Person. And yet even these, altho' they may be caus'd by the Faults in the Blood, yet the Diseas'd only perceives them by the help of the Nerves; for the Blood being viciated, and so alter'd, must, of course, differently affect the Nerves in its Circulation; by which means the Spirits being disturb'd, uneasie Perceptions are produc'd, which are distinguish'd by these Names: However, the Understanding knows nothing of the Causes by which these Perceptions are excited; and therefore cannot communicate what it doth not know.

VIII. But in order to set our selves in a clear light, as to these matters, I shall particularly enquire into the nature of Pain; for that being discover'd, the others will explain themselves. But to do this rightly, we must distinguish between the Cause of

Pain, and the sense of Pain ; the first is oftentimes without us, but the last always within us. An outward Force violently affecting any part of our Bodies, causes or gives an occasion of Pain, but it is the perception of it by the Mind, that really makes it : This is evident, in that but prevent any Communication between the Mind, and any particular part of our Bodies, and all sense of Pain in that Part will be absolutely lost. For Example, Cut the Nerve leading into any Member, by which the Communication between that Part and the Brain is intercepted, and that Member is no longer capable of Pain; cut it, tear it, burn it, yet no Pain is perceiv'd in it. But Pain is not always caus'd from without us, but sometimes from a Cause that is internal, in respect to our Bodies, altho' perhaps external in respect to the Organs of Sensation ; as is miserably experienc'd by those that have a Stone in the Bladder, Kidnies, or so forth, which cannot be contain'd in the Organs of Sense. Pain then, or which is the same thing, the perception of Pain is only in the Mind, altho' the Cause is in another part ; and the Mind being some ways unnaturally affected, by the means of the Organs of Sensation, from that Cause, the Pains seem felt where the Cause is. But the better to confirm and illustrate this, I shall beg leave to give an instance of a Case that has been taken

ken notice of in several under the same Circumstances by Learned Men. An aged Gentleman, who had been frequently afflicted with the Gout, or with Pain in his Feet and Toes, was necessitated, by reason of Mortification, to suffer an Amputation of his Leg; afterwards he would at certain times make lamentable Complaints of Pains in this or that part of his dismembred Foot. No Man, I suppose, will be so devoid of reason as to affirm he actually had Pain in his dissevered Limb, that being long since lopped off and Perish'd, and yet this Gentleman had Pain, or, which is the same thing, the Perception of Pain, as there. This I take to be full Proof, that Pain was there only in the Mind, because there then was no such part appertaining to the Body, that was then taken to be so. But to return, the Mind by perceiving Pain caus'd from any part of the Body, does not thereby get any knowlege of the Nature or Properties of that Substance, that thus causes Pain, as is undeniably evident in the Stone of the Bladder, Gout, or any other thing; for the Mind even in these greatest Sufferings, is not able thereby to discover any thing of what causes Pain; it cannot distinguish whether it is one or more, rough or smooth, soft or hard, solid or fluid, and yet it can discern a difference not only in the Degrees, but in the very kinds of Pains. By which it appears we have Organs that have a sense of Pain, where we have

have none of touching, by which I understand a power of distinguishing between the surface of Bodies as whether hard or soft, rough or smooth, and so forth. For that seems not to reach beyond the very surface of our Bodies, and so is only Cutaneous ; and therefore seems a Sense as distinct from that of Pain, as it is from that of tasting. The same reasoning I have us'd for Pain, will also account for Sickness, Uneasiness, and the rest, for all these being only Perceptions, the Mind is not inform'd from them of the nature of the Causes ; but being thus unusually affected by the Organs of Sensation, it must conclude there is some Cause that now creates them, but what that is, it wants Faculties to discover. By what hath been said it may be concluded, that we can know nothing of the Nature, Properties, secondary or sensible Qualities of the Blood, or of any Separations from it, made and lodg'd in the Body ; by any Information from others, or by any view taken by our selves, of what is made or perform'd in our own Bodies.

IX. I shall proceed now to examine what we can in particular know by its Motions and its Separations. The Motions, as I have prov'd, are twofold, the one of which is purely natural, as being common to all *Fluids* : It is not my Business to enquire into the Causes of this, it being sufficient to my Purpose that it is so ; by the means of this, if
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left to its self undisturb'd, it will part and divide into *such Parts*, as seem agreeable among themselves, although unlike to each other; as is manifest when detracted out of our Veins, in that it gradually runs into Serum, and more consistent Parts. The other is its Circulatory or Animal Motion, in which it seems only Passive, being impel'd and drove about the Body by the motions of the *Heart and Vessels*, and this it probable is what preserves it in its genuine Mixture and Crasis; by reason when it is remov'd out of the power of this Motion, it soon breaks, parts and divides, the simillar and agreeable Parts herding and associating together, by Virtue of their own natural Motion; whereas by this, it is hindered from so dividing, and preserv'd in one continu'd Mass; for the Blood being made out of different Substances, and its parts continually moving, would naturally if left to it self, (as hath been already demonstrated) run into different Parts. And therefore the mixture and union of its Parts, are in proportion to the quickness or slowness of its Circulation; for which reason it is, that the more vehement it circulates, the less it separates, and the slower it moves, the more: And it is from this reason, that fainting and expiring Persons so frequently fall into colliquative Sweats.

But notwithstanding so very differing Effects arise from these two Motions of the Blood,

Blood, as that its mixture to be preserv'd by one, and injur'd by the other ; yet there is a sort of Consent and Agreement between 'em for the preserving Life: For if the natural Motion encreases, by which the Crasis would be endangered ; the Animal one is by that very encrease awaken'd, and the Circulation is intended, whereby the Mischiefs from the first are prevented, and as the Animal one is encreas'd, the Effects of the other are lessen'd. However this I think every one may by Experience learn, that there is a sort of Harmony, Consent or Agreement between these two Motions, they mutually depending upon each other, for the Animal or Circulatory Motion is intended by the natural one ; as appears in that the Pulse will be affected by any commotion in the Blood ; and may be observed to be encreas'd upon the admission of the Alimentary Juices into it: And the *natural* must be constantly affected by the Animal one, as being disturb'd by its continu'd Progression.

X. But by reason the Circulation of the Blood is perform'd by an impulse it receives from the Organical Parts, *viz.* Heart and Arteries, whose Motions are not under the guidance or government of the Mind, it may perhaps be suspected by some, that such are incapable of being sollicitated into unnatural Motions, by reason they can perceive nothing of such an Irritation ; besides, they seem-

seeming to depend upon the Mechanism or Disposition of the *Parts*, actuated only by constant influx of Spirits, they must be as that is. I need not produce many Observations to remove this Objection, since it is so obvious in Purging and Vomiting, that several *Parts* of our Bodies may be irritated into Motion, without our knowledge. And in truth all the Organs of our Bodies, whose Motions immediately contribute to Life, are always so mov'd: But what more particularly answers this, that the Pulse always encreases upon the reception of the Alimentary Juices into the Blood, as every one may Experience by observing it a due time after Meals.

XI. The Blood notwithstanding its Crasis is preserv'd by the Circulation; yet it is not by that hindred from defecating it self by the Secretory Vessels, which are so placed and fashion'd, as to receive the superfluous and unnecessary Parts, whensoever such are befitted to pass thro' those Passages, and when they are not, they are sometimes thrown upon other Parts: When the Blood thus refines it self by the Secretory Vessels which are by Nature prepared for that purpose, its performance is natural, but when by other ways preternatural. The first are for the advantage and safety of the Body, the last usually the Effect of disordered Blood, but both afford us some helps to judge of the Condition of the Source from whence they flow.

XII. I

XII. By what hath been observ'd, I think it is evident, that the Blood is a Heterogeneous Body, and that its Parts are in perpetual Fluxion, and that it incessantly moves forwards in its proper Conduits; and that all the knowledge we are capable of having of its different Conditions, is only by the means of its *Motions and Separations*; and that the Separations in great measure depend upon the Circulatory Motion. Such for the most part encreasing and lessening in some Proportion as that Motion lessens or intends; so that the natural and healthful State of Blood seems to consist in a mean between two Extreams: In one of which, its regular Separations are hindered by the violence of its Progression; In the other they are enlarged by the Remisness of it. But how these Separations become disproportionate and unequal, shall be shew'd hereafter.

C H A P. V.

IN the former Chapters it is prov'd, that there are but two ways of discovering the Condition or Alterations of the Blood; in this shall be shew'd the Diseases that are seated in it; which may be distinguish'd into two sorts, *viz.* Acute and Chronick: By the first of which I understand such as are Sudden and Violent; by the second, such as are *Slow and Languid*: The first are usually but of short continuance, the other more tedious. The first may be again divided into Continual and Intermittent.

II. An Acute Disease in the Blood, is some sudden and violent Change in it, immediately perceiv'd by some alteration in its motions, which are usually accompanied with some Changes in the Separation, and is, as I apprehend, what is commonly, and in the general signified by the word *Fever*: It is true this is often discern'd by Heat, or a quick Pulse, or both; however the term *Fever* in the modern Sense of the Word, is not strictly confin'd to either. A Chronick Disease in the Blood, is only a slow Change there, that gradually arises from almost unperceiv'd beginning.

ginnings, and is discover'd by the same Methods: And is what is ordinarily, as I suppose, call'd an ill habit of Body, or Scorbuitical State, or by some other indefinite Term. For in either of these States, if the Blood makes any unnatural Separation; by which means, some formidable Symptom is produc'd, (it matters not whether to the advantage or not of the Patient;) it has been honour'd with a particular Name, and then of course treated as an entire Disease, as I shall shew hereafter. Whosoever will be pleased without Prejudice to consider the word *Fever*, in its general, ordinary and modern use, that is, in its full Latitude, will find that there can be nothing more intended by it, (if indeed any thing certain and real) than some sudden and unknown Change in the Blood, by which the Disease'd is affected either with Sickness, Pain, Uneasiness, loss of Strength and such like; and which can be discovered to us, but by some of the above-recited ways. It is true, the original and genuine import of the Word, seems to carry a more determinate Sense, for if the *English* word *Fever* is taken to answer to the Latin *Febris*, and the Greek *Πυρετός*, then it seems properly to imply Heat, and then in that consists its Essence. But if we observe the Writings of some Moderns; we shall find they will not admit of Heat, but a quick Pulse to be the Pathognomonic Sign, and

and some again neither. But my Purpose not being to examine Authorities, but to follow Truth, not to concern my self about the uncertain use of Words, but to apply my self to things, It is certain the word *Fever* is now sometimes used, where there is no unusual Heat, and it is as certain, it is used where there is no uncommon quick Pulse. Neither is it always used when there is the one or the other. If then it be asked in what it consists, or how it is to be known? it may be answered, in neither separately nor in any one single Symptom, but in a Bundle or Collection of several, that arising suddenly and co-existing are expressed by that single word, and so are consider'd, as making one Disease. But whensoever the Blood appears under any sudden Disorder, and the Body thereby diseas'd, that Indisposition is ordinarily call'd a *Fever*.

The different description of this Disease, the divers and even opposite Methods recommended for its Cure, abundantly shew the uncertainty of its Nature, there being almost as many Opinions as Authors; for the Term *Fever* seems to be as loosely applied in all sudden and violent alterations in the Blood, as the word *Scurvy* in slow ones. As to our second Division into continual intermittent, the Words so exactly answering the Alterations, they need no Explanation.

IV. But before I more particularly descend to treat of such things as are usually observ'd to be the Effects of sudden and violent Changes in our Blood, it may not be altogether improper to touch at Causes, by reason it hath been a prevailing Opinion among a great many learned Men, That neither the nature of Diseases are to be discover'd, nor Methods safely instituted for their Cure, unless their Causes can first be traced. That there is a Pleasure in Knowledge I no way doubt; but to pretend to a knowledge in things that are not capable of being known, is to betray our Ignorance; to search after Causes, is to pursue our Shadows, which we can neither overtake nor use; for we are neither capable of perceiving from whence they come, how they are receiv'd, or in what time or part they enter: Those poisonous and deadly Agents (that in all probability swim in the Air, because such Diseases are propagated by Contagion) and produce Pestilential and Malignant Diseases, (at periodical Times in some Countries) are not distinguish'd from the Air they rove in; neither is the Venom felt in our Veins, nor their Poison discern'd in its Operation.

Besides, supposing our Faculties were so elegantly nice, that we are able to distinguish those subtle Messengers of Diseases; I do not see what Advantage could be obtain'd by that Knowledge; because no sooner are these fatal Ministers receiv'd into our Blood, but they
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are immediately diffus'd through the whole Mass, and of necessity so blended and mingled with the other *Parts*, that they are neither to be distinguish'd nor separated: For now being whirl'd about in Circulation, and passing through all the small and meandering Vessels, they undergo a multitude of Vicissitudes, and so really become a part of the Blood, until they are again separated from it, which is not the work of Humane Skill, but of Nature; for it is plain, we are not with all our Art able to separate any one Substance from the Blood, that is actually mingled with it: And if this cannot be effected in such things as we do know, how vain it is to expect it in things we do not know. To discover the Truth of this, we need but examine those Substances that are discharg'd from us, which bear no manner of resemblance to what we Eat and Drink; nay altho' the Blood is made out of dissimilar Substances, yet so long as it runs in our Veins, our Senses discover no difference in the Parts of this scarlet Liquor. For whatsoever enters our Veins to be mix'd with, and converted into Blood, being first prepar'd by our Organs, by which it is so divided and alter'd, that the former Qualities are destroy'd, and new ones arise; and by this means altho' the Substances we eat and drink, often appear in their Qualities so very unlike, yet such are promiscuously converted into the

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same crimson Gore; the new Qualities by which they become Blood, being imparted to them by the several Alterations that are made by the Organs through which they pass: It is from this reason, the Blood bears no resemblance to the Substances out of which it is made; because the former Qualities of such Substances being destroy'd by our Organs, the new Ones that succeed bear a likeness to each other, as being given by the same Instruments. It is from the same reason, that those Qualities that Men usually survey in emitted Blood, *viz. Colour and Consistency*, are not observ'd to be, according to what Men eat and drink, but according to the nature of the Organs by which it is prepar'd; the Blood of the voluptuous Beau not being to be distinguish'd from that of the wretched Peasant, supposing their Health to be the same.

V. It is true, there are several Substances that notwithstanding they are prepar'd by our Organs, and converted into Blood, yet retain such poisonous Powers, as to be destructive to our Beings: But these direful Effects do not seem to proceed from any sensible Qualities of such Substances; but from some peculiar Figure of the minute Parts, which Figure not being alter'd by our Organs (for our Organs only divide and reduce Substances into their minute Parts, by which the sensible Qualities, as depending on their

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Textures are alter'd, but the Parts themselves may retain their Figures) the noxious Powers flowing from such Shapes may remain: And yet these thus unalter'd Particles, receiving from our Organs. new Positions, new Determinations, new Habitues and Relations, contribute to the producing such Qualities as intitle a Substance to be call'd Blood; for that the Qualities that appear in Blood, proceed from the positions and relations of the Parts, seems evident, in that they may be so easily alter'd in Phlebotomy; for but streighten or enlarge an Orifice, or but change the manner of its Stream, and you alter the Colour and Consistency of the Blood that flows.

Furthermore, The Blood when Diseas'd, is so depraved, as to remain unable to perform the regular Offices, by which the whole Body suffers: To remove the Disease, the Blood must be so restor'd, that the Functions may be duly executed. To do this such Substances must be administred, that are known to have a Power to restore the Blood to such a State; and to judge what Medicines are fit for this Use, we must inform our selves of the State of the Blood, by such ways as we are capable of knowing; which are only by the Motions and Separations, (as hath been already demonstrated) neither of which (as is manifest from what hath been observ'd) can lead us into any knowledge of Causes,

or if they did, such a Knowledge cou'd give us little assistance in the Cure of Diseases, although it might perhaps some in avoiding them. These things being so, methinks we trifle away time to little Purpose, in the pursuit of Causes we can never know ; or if we did know, could be of any use to what we intend them.

VI. But to return, sudden Changes or Commotions in the Blood, which I shall now call Fevers, may be consider'd under two Heads. In the one of which the Motions may be observ'd violent, and the Separations lessen'd. In the other the Motions appear alter'd, the Pulse being perhaps quicker, but not stronger, and the Separation rather encreas'd ; or although perhaps lessen'd in one part, yet encreas'd in another. In the first, the Crasis or Mixture of the Blood seems too strict and close ; the Parts being kept together by the violence and impetuosity of the Circulation. In the other they are too loose, being too apt to part and divide, as not being mov'd forward fast enough. In the first the Blood is by the too violent and strong Pulsations of the Heart, too rapidly whirl'd about the Body ; by which means the Parts are so confounded, jumbled, and so entirely mingled, that they cannot break or part from each other, and the Vessels become turgid and full, so that there is neither time nor space for leisurely Separations. And the
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Blood thus furiously drove about in Circulation, the Parts heat, expand, and sometimes extravasate or burst out of their proper Vessels; or being by some means stopped or hindered, in its crouding through the small, narrow and *meandering* Passages, or by the formation or situation of some Parts, or by some other unknown Cause, not so readily passing in some places, as in others, it creates and raises Pains, Inflammations, Soreness, and sometimes Tumours; any of which when observ'd formidable or dangerous, become then honour'd with particular Names, and are treated as entire and particular Diseases; and such Diseases, which is very remarkable, are for the most part denominated from the Part then affected, or from the manner of affecting; hence the Diseases, *Pleuritis, Peripneumonia, Rheumatismus, &c.* and sometimes such are in the general term'd only Inflammations; or if it burst out of its Vessels in bleeding, Hæmorrhages. In the second sort the Pulse is rather quick and weak than strong, the Vessels not turgid, by which it seems as if the Heart did not receive or throw out the Blood in proportionable quantity, so that the circulatory Motion appears but slow, that always being as the pulsations of the Heart are. The Crasis of the Blood seems somewhat loose, there being time and space for its Parts to break and divide, some of which stopping will become

Obstacles to it, in its progressive Motion; hence therefore it must circulate unequally, because being contain'd in that Motion by an impulse from the consistent Parts, it must run in greatest quantity where it meets with least resistance; hence the Secretory Vessels or Parts fitted for Separations, being unequally supply'd, must separate unequally; so that if Separations are diminish'd in one part, they will be usually enlarg'd in another. Thus may we often observe Sweats perhaps by Parts, as only upon the Head, Face or upper Parts, and sometimes profusive ones over the whole Body, Vomitings, Loosenesses, sometimes although more rarely, disproportionate quantities of Urine, which perhaps might be more frequent, were Men not obliged by Weakness or Command to a Bed, and sometimes Salivation: In some the very constituent Parts so break and divide as to stagnate near the Surface, and to create various Discolourations and Spots, but the Circulation not being forcible enough, do not rise into Tumours or create Inflammations; and sometimes the thinner parts will be spew'd slowly out of some of the Capillaries.

The word *Fever* is promiscuously us'd, as is most manifest from the Symptoms to denote two different States of Blood. In the one of which the Blood moves too rapidly in Circulation, by which means the Parts are so

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confounded, that the Separations are for the most part lessen'd.

In the other the Circulation is so languid, that the Parts become apt to divide and part from each other, by which means the Separations encrease.

In the first Case, the return of the Separations is the Cure of the Disease; and so are call'd Critical. In the last the Separations give no advantage, and so are term'd Symptomatical.

VII. I would not be thought so vain as if I imagin'd, that all sudden Commotions of the Blood, which are compris'd under the term Fever, could be always observ'd nicely to quadrate with what I have here but in the general hinted; for altho' their appearances may be consider'd under the Heads I have plac'd them, yet it must be no wonder if they do not always continue in their whole course the same; for their beginnings, progress, height or declination, will be sometimes very differing, both in their Motions and Separations. Besides, the frequent remissions make marvellous alterations to the Observer, by reason the variation in the Motions is immediately perceiv'd, but that in the separated Juices cannot; because they may remain some time in the Body after they are secern'd before they are excreted. However, it is sufficient to my purpose, that we are indebted to these for all the know-
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ledge we have of such Commotions, there being nothing else that can appear to direct us in it.

Recapitu-
lation.

The sum then of what I have said is, That Diseases in Humane Bodies are Changes in them; and that all such proceed from the Fluids, that is, the moving Particles; and not the consistent Parts, that is, from such as are united: That if they are affected, *viz.* the consistent Parts, as sometimes they are, it is by the means of the Fluids, (excepting where they are injur'd by some external violence). That in our Bodies may be observ'd variety of Fluids, of which two are common, the other proper to particular Parts. Of the common, one is primary, being the source from whence all the others, as well common as proper, are separated. That the primary common Fluid is what we call the Blood, which is made up and compounded of very differing and unlike Parts. That this Blood enjoys two Motions; the one of which is natural to it as it is a Fluid, being only the intestine agitation of its minute Parts: The other is its circulatory, animal, or progressive Motion, which is proper to Life. That by the first of these it is in its natural and healthful State, disposed to separate and part from its disagreeable, useless and unnecessary Parts; that is, the homogenous congregate, and by that thrust out and separate from the heterogenous;

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nous; but that it is hindred in this Work, by its being impell'd forward in Circulation; however, that it doth send out such Parts by the secretory Vessels, as are requisite to continue it in a State that may be useful for the Body. That these Vessels are only passive in separation; for being consistent Parts, they naturally remain, in relation to the Body, in the same place and state. That in Health the Blood is always dispos'd to let go such Parts, as are necessary to form such appropriate Juices as these Vessels are prepar'd to separate; and the Blood always circulating, these Vessels will be supply'd: So that so long as these two Motions are natural, equal and just, the separations will be so, and then, so far as we can discover, the Blood is in a state of health; but when the natural Concord between these two Motions is interrupted, the Blood swerves from its natural state, and the separations become alter'd and vitiated. Then it must follow, it must be by these, that the Vices, Faults or Diseases of the Blood, can appear to us no ways, but by these separations from it, or the motions of it. And as it is only from these we can discover such, so it is only by these we can be directed in our Methods to remedy, because, indeed, there is no other ways whereby to do it. That the account had from the Sick, can give us small light into the nature of such Diseases,
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because he can only relate what he knows, which, indeed, is nothing of the Blood. That the ordinary way of treating Sickness, under certain kinds, is uncertain and dangerous, in that the same Symptoms do not regularly co-exist. That it is but frivolous to enquire after Causes, which, if known, cou'd be no help to the curing Diseases.

C H A P. VI.

OUR knowledge of Diseases seated in the Blood, reaching no farther than a discovery of some unusual Change, Commotion or Disorder there ; and that being only attain'd by our Observations upon the alterations in its Natural or Animal Motions, or its Natural or Preternatural Separations: For as for any of its Properties, Qualities or Powers, so long as its contain'd in its proper Vessels, that is, so long as it is running in our Veins, we seem entirely excluded from any knowledge of them. I shall now proceed to enquire, what we have learn'd of Methods and Remedies, whereby we may be enabled to lessen and quiet these Disorders, when too violent, and so to open and make way for the return of the natural and usual

usual Separations; or when the Motions appear languid, the Crasis loose, the Separations alter'd and vitiated, to better them, and reduce them into their natural State.

II. In doing this we may consider, all Medicines may be rank'd under two general Heads, *viz.* Either such as evacuate, or such as only alter. By the first I understand all such things, by whose means somewhat is empty'd, discharg'd or exterminated the Body, so that Quantity is lessen'd: By the second I intend all such things that have a power to alter or change some Quality, Property, Action or Operation, without effecting any discharge, so that no quantity is thereby lost. Evacuations may be consider'd either as such as discharge some part of the Blood it self, or as such as empty only Parts that are separated from the Blood. These latter may again be consider'd, either as such as seem to empty what is first separated; or as such as being receiv'd into the Blood, do thereby some way dispose and cause it to separate; which being perform'd by the means of such Vessels that have not Cisterns to receive and contain the Juices, are immediately discharg'd the Body: Or if by such as have them, then such Juices remain, until either the Vessel grows full, or is some ways sollicitated to discharge them. A due consideration of the nature of Evacuations, will let us safely into their true use:

use: For as nothing but a redundancy of superfluous or hurtful Matter, can reasonably incline us to make Evacuations; so the nature and situation of that Matter, will direct us in the methods and ways of doing of it.

III. It is certain, in *Fevers* Evacuations are either profitable or hurtful, as they are skilfully or improperly apply'd: For whilst the Blood labours under such Commotions, by Evacuations, *jacta est alea*, for the Life or Death of the Sick; because by such, either the Strength of Nature, or that of the Disease is weaken'd: If the Disease, Nature soon triumphs in Victory, and Health is gradually restor'd; but if the Disease, Nature is made a Captive, and Death leads the Body into the Grave. And herein consists the great Secret in Physick; *in rightly judging when it is necessary and safe to evacuate, and in distinguishing by what ways and methods it ought to be done*; for if we mistake in either, instead of preserving the Sick, we may destroy him: In *old Rome* it was much more glorious to save a Citizen, than to destroy an Enemy; so in Nature, It is much better to cherish what is useful to Life, than to destroy it in hopes to wound an Enemy. And even in this critical part of Physick, if Men would but with Care attend to what Nature will direct, they need not err; for there never is, or can be such a redundancy of
useless

useless or noxious Parts, that require to be evacuated, but some Signs, some Marks will appear, to direct, how and by what ways they are to be discharg'd; but if Men, elated with their own Opinions, will not wait for Nature's directions, but will rashly attempt to assist her against her Enemies, before they are able to distinguish them from her Friends; it is no wonder if they often destroy the latter in the place of the former; and so, instead of relieving her wound her, instead of strengthening her weaken her, instead of succouring her oppress her.

For notwithstanding in *all Fevers* the Blood seems to be under some disorders, yet Evacuations cannot remove such disorders, unless the Cause of such is so seated, as that the Evacuation may discharge it; which we can never know, unless Nature by some Signs direct us; which she will not fail to do, when our assistance can be of any advantage to her. For instance, Can the Blood so swell in its Vessels, or can its Motion be so rapid, but the Pulse will shew the necessity of Phlebotomy? Can there be such a diversion or translation of the other Juices to different Regions; or can the Blood make faulty Separations in Parts where it ought not, but by some Signs such may be perceived? Can the Separations be vitiated, or can they be choak'd up or stop'd, but they may be discern'd? Can the Blood be prepared

red to throw off its noxious Parts, but some Signs will reveal its good Inclination? And when nothing of this nature appears, what is it we would evacuate?

It is true, whilst our Bodies are thus disorder'd, and no Signs appear to direct us where to annoy the Enemy, we must remain under some difficulties: However, some Appearances will often break out, to shew us which way to succour our Friends; but then this is not to be done by such things that evacuate, but such as rather refresh and comfort: And what will best perform this, the very nature of the Symptoms will direct us; for when our Spirits are weary'd out with Watchings, what can be a Comfort but giving them Rest? When tir'd out with Pain, but quieting that Rage? when low and deprest, but replenishing them? When our Blood breaks and divides, what can be useful but quickning its progression? When it spews out its Parts too fast, but to keep them together? When it boils and heats, to supply it with Juices, as will either lessen, or at least not increase that Orgasm? And it is plain, we want not helps to perform all these.

IV. But in order to come to a better understanding in these things, we ought to consider, that all Evacuations presuppose somewhat that is hurtful, inconvenient, useless or unnecessary to be evacuated; so that
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rightly to determine of the kind or manner of Evacuations, we ought first to be inform'd, what it is that requires it; and to know this we must have recourse to the Symptoms, for it is from them only we can collect where or how the peccant Matter lodges; and that being learnt, our Evacuations may accordingly be adjusted. Thus, if we perceive the Blood hot and boiling, and so rapidly impell'd thro' its proper Conduits, by the strong Pulsations of the Heart; that the Parts appear so much confounded and mingled, that the visible Separations become comparatively lessen'd, and those that are so alter'd, as they appear rather to be the effects of some violence, receiv'd by the secretory Vessels from the too violently running Blood, than from an orderly and leisurely Separation. In this Case there being no appearance of separation, nor no aptitude to separate, there can be nothing that seems to point out particular Evacuations, by reason there is as yet nothing separated to be evacuated; so that here the only Evacuation that Art hath found out, or reason can direct, in order to remove what is hurtful or inconvenient, is to let out some part of the Blood it self: For its Vessels being by this means empty'd, there is gain'd space and time for separation; for having more liberty, the Parts may the better part and divide. Neither can the Blood be mov'd

so rapidly in Circulation, when its quantity is lessen'd by Phlebotomy, because the Parts cannot be so contiguous to receive and continue that Motion. Besides, during such Commotions, the Parts of the Blood are so confusedly mix'd and blended together, that the noxious and peccant are not to be distinguish'd, being as yet undivided; so that it is trifling to pretend to evacuate what as yet is not separated, and so does not formally exist. Neither are we, as I apprehend, enrich'd with any one Medicine that is endow'd with any certain Property or Power, whereby safely to bridle, stop, hinder or quiet this violent Commotion, when once actually begun: The utmost of our power for the lessening this, seems to consist in bleeding, and the utmost of our skill in the repeating or proportioning the quantity. It is true, indeed, such is the nature of our Blood, that such violent Commotions are never lasting, unless they are supply'd with fresh Matter that will continue or increase them (as I shall further shew in the Case of Hecticks) for they will most certainly some way or other determine themselves, either by breaking in upon, stopping or hindring some Motions that are essential to Life, and so extinguish it: Or otherwise they will gradually abate; the Blood despuming it self, by the help of the secretory Vessels, or some other Passages, that is, the

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Separations will return ; or if the Blood doth not fine it self by these natural ways, 'twill cast out or throw off its noxious and offensive Parts by some *unnatural separation*, that is, upon some *consistent Part* that is not by Nature adapted for such uses: For such is the undoubted Nature of our Bloods, like all other Liquors made up of dissimilar Parts, that it will some way or other despume it self; that is, the Orgasm will cease, unless it be continu'd by a supply of hurtful Parts. And as Bleeding seems to be the only direct Application for the reducing this, and the disposing it to separation ; so is the observing a due Regimen, in the regulating our Foods and Drinks, that nothing may be taken that will contribute to the continuing this disorder, the principal means to prevent it; for altho' we know nothing positively that will suppress it, yet we have too often, to our Misfortunes, experienc'd what will support it and continue it.

V. All other Evacuations presuppose some peccant Matter to be discharg'd, which is either already separated from the Blood, or is prepar'd and befitted to separate; for otherwise we administer them for no purpose: For altho' we admit all such violent Com-motions in the Blood to have some Cause, and that so far as we can well conceive of it, must be by the admission of some new, or by the return of some formerly separated

Matter, which being very heterogeneous, creates such disorders; yet this very Matter, when once admitted into the Blood, is soon, by the continual Circulation, mingl'd and blended with it, and so makes but one Mass; until being separated by the secretory Vessels, or thrown out upon a particular Part, and then being thus parted, it becomes the subject of our care. For the parting or separating peccant or offending Matter from the rest of the Mass, is a Part purely natural, as I shall prove hereafter. It is true, Art may give assistance, when Nature is dispos'd to part with it: Or it may, by the abating the too violent Motions of the Blood by bleeding, unloosen, or, as it were unbind its Parts, that it may be fitted for Separation; but cannot divide the peccant Parts, or force them to divide or separate from the other: But of that hereafter. However, they are not to be discharg'd separately until they are divided.

VI. It is an usual and prevailing practice in the beginnings of most acute Diseases, that are suppos'd to be seated in the Blood, to administer a Vomit; and indeed it seems reasonable, where we have probable inducements to incline us, to think that the Origin, or continuation of the disorder, flow'd from some extraneous Juice, admitted with the Alimentary ones; or that such had become hurtful by their quantity or stay in the
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Stomach. For then by this early Evacuation such Mischiefs are prevented, that otherwise must have arose from the descent of that Matter into the Intestines; from whence some might pass into the Blood, to increase or support the Orgasm, and to render such Evacuations useless: And this seems to have been the reason for that celebrated Aphorism of the great *Hippocrates*, Ἀρχαῖων ἔνθεν, *incipientibus morbis, siquid movendum videatur move, vigentibus autem quiescere multo præstat*; for that experienc'd Physician knew full well, That the beginning of Diseases do usually permit of Evacuation, by reason the Separations are not often affected, until the Disease is increas'd; and when those are hinder'd, such Evacuations become dangerous.

VII. But because in this Discourse I make frequent use of the Words *Separation* and *Secretion*, it may not be improper to explain in what Sense I use them. By these Words then, I only intend *a parting or dividing some Juice or Humour from the Blood*; and this when perform'd in a natural way, is done by Vessels appointed for that purpose; but in Diseases it is sometimes effected after another manner; for Separations are made in Parts that are in no wise befitted for that purpose: Howsoever, what induces me to call such Separations, is, their being separated from the Blood, and bearing no resemblance to it, thereby to distinguish them

from such as proceed from the Blood it self. For when any Parts of the Blood recede from the rest of the Mass, or are forc'd from, or extravasate out of the proper Passages, and yet retain the Form of Blood ; altho' such afterwards change their Natures, and are converted into what we call *Pus*, or *Quiller*, yet I do not term such Separations, because the substance of the Blood is, in that case, chang'd into *Pus* in the very Part.

There are several Diseases, that are denominated from the Part affected: Such as *Pleuritis Peripneumonia*, that are occasion'd by such an expansion or extravasation of Blood, which not being maturely reliev'd by Venesection, do impostumate and become *Pus*; which being hurtful to our Natures, ought to be discharg'd. And because the Organs employ'd in Respiration are frequently thus affected, it may not be improper to examin into an Evacuation that is often encourag'd in such Diseases, and is only perform'd by the means of those Organs ; And that is what is call'd *Expectoration*.

For whatsoever, by that Motion of the Organs of Respiration, that we call Coughing, is rais'd and discharg'd out of the Breast, is said to be Expectorated.

But that the Nature, Use and Manner of promoting this Evacuation may be the better comprehended, it may be convenient to observe what Symptoms accompany these Cases;

Cases, that favour or require this Discharge.

VIII. Whensoever the Lungs appear so loaden and stuff'd that Breathing is difficult, Expectoration is indicated; but because these Parts are frequently affected from that state of Blood that requires Venesection, I shall particularly regard such Symptoms as are produc'd by that.

Whensoever then the Lungs, or Organs employ'd in Breathing, are injur'd by that state of Blood that is to be alter'd by bleeding, they become so sore and painful, that it is a trouble to the Diseas'd to cough or breath.

What is usually expectorated is thin, frothy, little, and often radiated with Blood.

But when by large or repeated bleeding, the Orgasm of the Blood is abated, the pains and foreness lessen, and the Matter expectorated becomes more thick and digested.

But to form a just Idea of Expectoration, we must consider the Parts from whence this to be expectorated Matter comes, and thro' which it passes. The first is the *Lungs*; the second the *Trachea*. The Lungs are only a number of thin Membranes, knit together after the manner of Net-work, with the Blood-Vessels, and those of the *Trachea*. The *Trachea*, which is the Pipe thro' which the Air passes, is divided into a multitude of Branches, which are disseminated in the Lungs; the Matter to be expectorated must

pass into the *Trachea*, and be rais'd through that into the Mouth: The *Trachea* is inserted into the upper parts of the Lungs, and the Lungs plac'd in the hollow of the Breast; so the Matter expectorated must ascend, and therefore requires a force to raise it: The Air is what passes and fills the Cavity of the *Trachea*; and the Organs about the Breast, employ'd in Coughing, are what give the impulse for the raising that Matter: For the Air contain'd in those Cavities, being forcibly impell'd by that Motion, raises up the expectorated Matter, and the expectorated Matter is separated or divided from the Blood.

Three things therefore are perfectly necessary to make this Evacuation

First, A Motion of the Organs to give the impulse.

Secondly, An aptitude in the Air to receive this, in order to raise such Matter.

Thirdly, A right Disposition of the Matter that is to be so rais'd.

But the two first not being the immediate Subjects that Medicines are employ'd about, I shall at present defer any farther Consideration of them, but particularly apply my self to the last.

It is very evident, that Matter may be expectorated, these things are necessary:

1. That it be parted from the Blood.

2. That

2. That it be Incrassated, and so fit to raise.

3. That it be so situated, that it may be capable of it.

For Expectoration is effected by Coughing, and Coughing by a preternatural Motion of the Organs of Respiration. If then Matter is not parted from the Blood, it cannot insinuate far enough into the Vessels to be raised; if it is too thin it is incapable; if it lodges so deep in the small Vessels, that there wants Air to impart force it cannot.

If we reflect but upon the structure of a Humane Body, and the Passages through which such Medicines, we call Pectorals must pass; we must soon be convinc'd, that to contribute any thing towards Expectoration, they must exert their Powers in the Blood; and in doing that, they can be only assisting in the dividing or parting the Matter to be Expectorated, from the rest of the Blood. For as to the other two, *viz.* the thickening the Matter, or the bringing it into the larger Cavities of the Trachea; these in no ways relate to the Medicine. The first relating to the Nature of the Blood, the second to the dispositions of the Vessels.

If then the Matter to be expectorated, is already divided from the Blood, and is either in its Nature or Situation befitted for it, Coughing will raise it; and if it is not, it is too dangerous an Experiment, to rely upon
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Pectorals for the doing of it, until such time as the parts of the Blood are unloosen'd, and the Mixture open'd, as I have already intimated by Phlebotomy; and then there requires no such helps.

It may perhaps be objected, that some Medicines experimentally help Expectoration, by some otherways than the Blood, because being only held in the Mouth and gently swallow'd, such immediately promote an easy Spitting.

To which may be answer'd, that notwithstanding some things thus detain'd in the Mouth, do please by their grateful Taste, and lubricate and moisten the contiguous Parts, and by that means some viscid Matter that adheres and sticks thereabouts, is the more easily excreted; yet it is plain no Parts descends directly into the Lungs, because the least Particle that enters that way into the *Trachea*, does immediately give very vehement Disturbances. Besides I do not conceive in a true natural State, that the Lungs separate any thing to be discharged this way, more than what evaporates with our Breath; by reason nothing can come from them but by Coughing, and Men in a natural State do not Cough. So that it doth not seem probable, that we should be able directly to make or help an internal Separation, by a part that is not by Nature befitted for such a Use.

IX. But

IX. But to return to the general Cases, where the Motions are so violent, and the Separations little and confus'd; in such all that I can apprehend, that can with real safety and advantage be done, must consist in these two Intentions, first to lessen and quiet the Commotion, that the Blood may the sooner separate; and when it does separate to regulate it by particular Evacuations, according to the Indications. The first is to be consider'd two ways; First, positively what is to be done. Secondly, negatively what is not to be done. The first principally, if not only, consists in Bleeding, and in the repeating or proportioning the quantity, according to the Symptoms, Circumstances and Indications. The second in what is not to be done, for although Art hath not as yet taught us any one Remedy that will safely and effectually quiet or suppress this Commotion; yet we have learnt what will encrease, enrage and continue it, as is most evident all Flesh, strong Meats, spirituous Liquors, and such like will do. These therefore are to be forbidden, and such things only conceded as will not.

X. The sum then of what hath been here said, is, that in violent Commotions of the Blood, where the separations are but little and confus'd, the Pulse strong, and the Heat intense, the only Evacuations that can with safety be administred is Bleeding, by reason
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others presuppose Separation, they only discharging separated Juices; and here Separations are really wanting from the very Nature of the Disease, and we cannot reasonably pretend to Evacuate what as yet is not, or what at least is so mingled and blended with the Blood, not being as yet divided from it; and therefore not by such Methods to be evacuated.

C H A P. VII.

TH E other general Head under which I have comprised sudden and dangerous changes in the Blood, is, when its Motions are alter'd, but in a very differing manner, the Pulse being usually too quick, but not vehement or strong, the Circulation being rather languid than rapid, the Heat perhaps rather unequal, the Vessels containing the Blood rarely turgid or full; sometimes Discolorations and Eruptions appear upon the Skin, or Blood gently spew out of some of the Capillaries; the Separations being rarely either lessen'd or suppress'd, but only alter'd, or vitiated, or perhaps some increased, though others lessen'd, as may be observ'd by the partial, or sometimes profusive Sweats; by the Loosnesses, Vomitings; by the

the full quantity of Urine, although perhaps foul ; by the Mouth and Tongue which are often foul, but rarely parch'd or dry, unless by an accident after sleep, where they breath by the Mouth : By these or such like Symptoms, which will be very different in different Persons, it is very evident the Separations are continu'd, and are by some Passages or other discharg'd. There are other Separations which it is probable may be likewise Viciated, that are not discover'd, because their Juices not flowing out of the Body, do not immediately fall under our Examination ; however by the Effects observ'd in those Regions where they are made, we have reason to conclude that they are so : Thus by the Tumours about the Glands, the Pains and Disorders about the Region of the Spleen, and the Weakness and Affections about the Joints, it appears that those Vessels there situated, are some ways in their Offices or Uses perverted.

However, altho' nothing certain can be determin'd, of the alteration of such Juices, whose Uses are not discover'd (nor perhaps without a Revelation never may) yet there is another invisible Separation perform'd by the help of the Brain, that manifestly appears to be so ; for the Animal Spirits that are prepar'd by that Organ (whose Uses are abundantly known) appear alter'd ; in that their Functions and Operations are per-

perverted, as becomes evident by the frequent *Deliriums, Phrensies, Convulsions, irregular Motions, &c.* which frequently appear in these sudden Changes of Blood.

II. These Symptoms or Appearances thus briefly recited, denote a State of Blood, extremely differing from the former; although both of them, either by reason of the suddenness or violence of the seizure, or of the danger in them, or that perhaps they may seem to agree in some one or more particular Symptoms, have been promiscuously comprehended under one and the same term, Fever. But notwithstanding Men have thus thus agreed in the use of one common Word, to signify both, yet being so very differing, and so unlike in their real Natures, as consisting in such opposite states of Blood; such plainly indicate the use of differing Methods and Medicines for their Cure; and Experience will soon convince the diligent Practitioner, that such ought to be observ'd: For as in the former of these, the parts of the Blood are too vehemently mov'd, and therefore permit of little Separation; and of consequence indicate no particular Evacuation, there being nothing separated to Evacuate by such ways; and therefore the only Evacuation, that can be of any use, is only lessening the quantity of the whole Mass by Bleeding. So in this latter where the Motions appear languid, the Mixture loose, the Separations
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not comparatively lessen'd; the separated parts may be evacuated, if the other Indications will permit, but no part of the whole Mass to be lost; the Blood here requiring no room, for it rather breaks too much.

III. But to come to a clearer understanding of the Uses of particular Evacuations in these kind of Diseases, it may not be improper to enquire into their Natures, and by what Ways and Methods they are to be produc'd. But to do this we must consider, that all particular Evacuations, (and I call all such but Bleeding,) may be rank'd under two Heads, *viz.* Either such as are immediately perform'd by Organical Motion; or such as are effected in the Blood it self, the Organs being only passive. Of the first sort are Vomitings, Purgings, Sneezing, &c. For these are nothing but violent and unusual Motions in the Organs subservient to these Uses; which being irritated, solicited or some ways affected, by some incongruous or disagreeing Parts, fall into these unnatural Motions, by which these several Effects are produc'd: Of the second sort are Sweatings, causing Urine and Salivation: These are caus'd by a Medicine exerting its Power among the insensible Parts of the Blood it self; by some ways moving, breaking or dividing the Mass; by which means some Parts being dispos'd to part and divide, flow out of the Veins by such Passages, as are best befitted for that
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Purpose : And in this Case, the Organs give no assistance to the discharge ; for the Blood being disturb'd by the Medicine, some of its Parts run out of the Body, by any Passages they can find. It is true, in Urine it happens otherwise, for that does not immediately, as it drills from the Blood, flow out of the Body, but is received into some Cistern or Repository, where it remains until such time as the Fibres or Membranes constituting that, are loaded by the quantity, or some other way solicited, they contract, and so discharge what is there contain'd ; as we see in the returning Urine from the Bladder, which is not made there, but separated by the Kidneys, and so from thence drills down the Ureters, and lodges in the Bladder, until discharged from thence.

IV. We may likewise consider that in the first of these, that are only caus'd by the Motions of the Organical Parts, that the Medicines that occasion such are convey'd, or do pass into the very Parts, where the Fibres, by whose Motions the Evacuations is perform'd, are situated : And that the Operations of such do always succeed, that is, that an *Emetic*, *Cathartic* or *Sternutatory* Medicines will be such to all Persons, and at all times, if administered in quantity, and can be but lodg'd upon the Parts ; except in such Cases where the Organs are incapable of Motion, or insensible of Irritation : Or where a vain
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and continu'd use hath render'd them habitual and agreeable, as we may observe in the use of Snuff. Whereas in the latter, where the Medicine exerts its Power in the Blood, and so only disposes that to Separation: And the succeeding Evacuation is but the effect of that. The Operations are much more uncertain, as may be experienc'd from Sweating, Urine and Salivation, which will not always so regularly follow the use of such Medicines as are esteem'd promoters of them. In these last Cases, the Evacuation is but an effect of the Separation, which the Medicine is presum'd to help or make; but in the first the Medicine occasions the Evacuations, but does but by accident promote the Separation: As I shall prove more at large, when I treat severally of them.

V. I shall here only take notice, that although it is most certain in the Operation of Purging Medicines, that more is sometimes evacuated, than can in reason be suppos'd to be Separated, or contain'd in the Intestines, or in the Vessels adjacent to them, and so, of consequence, must be parted, or brought out of the Blood: Nay, although some parts of the Medicine do undoubtedly pass into it; yet it doth not there seem to exert any Energy, Efficacy or Virtue, in disposing or helping to part or separate those Juices that are discharg'd by that Operation: But only by continually solliciting and irri-

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tating the Fibres of the Bowels into violent Motion, the Blood-Vessels that pass in about the Membranes of the Intestines and adjacent Parts, are squeez'd and variously affected, by which such Parts as are best dispos'd to insinuate into the Cavities of the Meandering Guts, are discharg'd. For were this otherwise, the Separations could not be of so short continuance, as never to out-live the motiou of the Bowels, as I never yet could observe they did. But of this more when I treat of Opium.

VI. Diuretics, or Medicines causing and encreasing Urine, may be observ'd to be very uncertain in their Operations; for Urine being a separation from the Blood, whatsoever causes or encreases that, must some way so dispose or alter the Blood it self, that such of its parts may be more plentifully secern'd by the Kidnies, and from thence flow into the Bladder. And the Blood being so very different in several Bodies, it can be no wonder, if the same Remedy does not at all times in all Bodies produce the same Effect; as it is most evident it doth not, that being often a powerful Diuretic in one, that in another will discover no such Vertue. For perhaps, modestly and truly speaking, Art hath not as yet prepar'd, nor Experience discover'd, any one Medicine, that will at all times, and to all Persons, prove it self a true and real Diuretic: By which I understand such a
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Medicine, that will always cause such a quantity of Urine, as will plainly demonstrate it to be the genuine effect of it: Not but I own there are some things that usually pass the Strainories of the Kidnies, and so some ways affect the Urine, as plainly to prove it by the Smell, or some other ways; as is most apparent in that common Esculent Plant *Asparagus*, as likewise in Turpentine, Nutmegs, and several others. But notwithstanding such notoriously disclose, by the alterations they occasion in the Qualities of the Urine, that they some ways affect or pass that way, yet it doth not always appear by the quantity, that they increase it. And, as I conceive, it is a very different thing for a Medicine to pass out of the Body such a way; and a Medicine to cause or increase the discharge that way.

VII. As to what are call'd Diaphoretics, I must likewise ingeniously acknowledge, that I have never as yet been so fortunate, as to have found one (altho' I have try'd many that have had the Authority of great Men to recommend them) that would always, that is, regularly, constantly and certainly produce a Sweat, without the assistance of external Warmth or Heat, and by that it may be effected without them. I would not be here misunderstood; I do not say this to condemn the use of Medicines, rank'd under that Character; nor that the

Body being sometimes dispos'd for Sweats, they may not be occasion'd, assisted or encreas'd by them. But what I intend is only this, that there is no one Medicine that will upon all Persons, and at all times, unassisted by outward Heat, certainly procure it. And I am now hinting at the Separations made and enlarg'd, by virtue of Medicines operating in our Bloods, and their general uncertainty; and not of this or that Medicament, being a Diuretic or Diaphoretic to this or that particular Person, for in such, I own, we abound. This being only in the general premis'd of internal Evacuations, that are sometimes prescrib'd in these sudden and dangerous Changes of the Blood, where the Motions are comparatively languid, and the natural Separations rather vitiated than less'n'd, and which are often accompany'd with preternatural ones; which I have already explain'd.

VIII. The next Consideration is, which or when, one or more of these may be with safety and advantage administred: To clear this, we must observe the only Indication that points out to us an Evacuation, to be made or perform'd by the immediate Motion of the Organical Parts, is, that there is some actual separation of hurtful or unnecessary Parts, that are already lodg'd, to be thus evacuated; or that the Blood appears some way dispos'd to separate such Parts, and there-

therefore may be by the Organs solicited for that purpose; by reason such their Motions can only discharge what they already contain, or what they can receive from the Blood and the adjoining Parts, during the Operation. Now if it appears by any discernable Separation, that any advantage accrues to the Diseas'd by it; that is, the Disorders abate, and the Symptoms lessen; so that the peccant or offending Matter seems to pass that way, it is plain, it ought to be cast out, that the Body may be freed from it; and in that very way it seems best dispos'd to pass. But on the contrary, if such Separations as the Blood makes, are experienc'd to be hurtful; or if no advantage is perceiv'd to proceed from them, it seems to little purpose, by such Evacuations, to continue or increase them. For these kind of Evacuations not being to be perform'd without a violence upon the Spirits, as being the Instruments in procuring all Organical Motions; if therefore such Evacuations are in themselves hurtful, or indeed useless (as discharging what is of no advantage) they must be farther so, if encreas'd or continued; besides the Mischiefs that may arise in disordering, and thus unnaturally harassing the Spirits in making them. For the advantage or disadvantage of these Evacuations in the present Case, must be according as the Blood is dispos'd, or not dispos'd to part with, divide or separate from such of-

Evacuations not always useful.

fending or hurtful Parts that occasion'd its disorder, that they may be by this means expell'd. For these Evacuations being perform'd by the Motion of the Organs, and so, as it were, external to the Blood, can only discharge what the Blood hath already separated, or what it will separate during the Operation. And since the parting, separating or dividing, peccant, offending or hurtful Matter from the Blood, must be done by the Blood it self, the Organical Parts being only passive in Separation; It will be first proper to examine, whether such Medicines as procure Evacuations directly from the Blood it self, can contribute any thing to that Work, before we treat of the Evacuations effected by Organical Motion.

IX It is most evident in some Diseases, that notwithstanding the Blood continues to make plentiful discharges by the secretory Vessels, yet the Diseas'd receives no advantages by them: It is likewise as certain, that Evacuations procur'd by Medicines, are sometimes with no success.

From both which Observations may be inferr'd, that unless the Blood is dispos'd to part with, or separate from what is hurtful, it is not to be forc'd to it by such Evacuations.

But because there are but two sorts of Evacuations that are in ordinary use in these kind of Fevers, that are to be effected by
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Medicines exerting their Powers in the Blood ; therefore at present I shall only treat of them.

It hath been already observ'd, that all such Substances as being receiv'd into our Bodies, and find their way out by the Urine Vessels, are not to be esteem'd *Diuretics* ; because, if their passing that way was a reason to entitle them to that Appellation, then all Liquids must claim it ; but more especially such as are of thin and watry Parts, because our Urine is, in great measure, in some proportion to the Liquors we take : But if such things only are to be accounted Diuretics, that really increase the quantity of Urine, by a specific Power they have to cause the serous parts of the Blood to run that way ; then, I say, I am apprehensive we have few or no Diuretics.

This, indeed, is observable ; That all thin and penetrating Liquors (such as are perfectly defecated and refin'd from gross and tenacious Parts) generally speaking, pass quickest by Urine, and more especially when drank upon an empty Stomach ; for then, making but a short stay there, and not being entangled with grosser Juices, they nimbly glide thro' our Veins, and run away by Urine.

Nature hath wisely plac'd two Drains, for the watry Parts of such Liquors we daily take, to pass away from the Blood, viz. the

the Kidnies, and Pores of the Skin; and these are so plac'd, that one may supply the defect of the other: For whensoever the cutaneous Passages, by the coldness of the Air are so constipated, that the Blood cannot emit the watry Parts in vaporous steams, the Kidnies supply that defect, in permitting larger quantities to filtrate that way: And, on the contrary, in the warmer Seasons, when the *Serum* plentifully evaporates, thro' the outward Pores, a smaller quantity drills thro' the *Renes*: Thus Sweat and Urine seem the Reverse to each other; when Men sweat most they piss least, and, on the contrary, when they piss most they sweat least.

And it seems to be founded upon this Reason, That Diuretics in these Fevers, are almost come to disuse; by reason Custom, or Weakness, confining the Diseas'd for the most part to their Beds, the quantity of Urine by that means seems to lessen; and so Diuretics losing their esteem, come to be more rarely administred; whilst Diaphoretics, for the same reason, flourish in esteem, and increase in use: Wherefore pretermittting the former, I shall more particularly inquire into the use of the latter.

X. But because there are such a multitude of Medicines that are esteem'd Diaphoretick; some of which are so extremely different in their Properties, that if they all really deserve that Appellation, it is plain, they must
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effect the same Evacuation by very different Operations: Wherefore, that this may be the better comprehended, it may be necessary, before I descend to enquire into the Effects and Operations of Medicaments causing Sweat, to make some enquiry into the nature of Sweating it self; which, I think, if diligently and heedfully observ'd, may deservedly be consider'd under three several sorts or kinds.

The first to be observ'd, is a cold, clammy colliquative Sweat, such as accompanies sometimes Faintings, Swoonings, Sinkings, Fits, in which the Spirits falling back toward the Brain, abandon the outward Regions of the Body; by which means the cutaneous Fibres relaxing, the Pores become more open to yield a Passage to the *Serum* of the Blood; and the Blood being but languidly impell'd by the faint Vibrations of the Heart, the ferrous Parts more readily recede; and having strain'd thro' the Skin, soon appear cold; in that the Blood moving but slowly, cannot warm the extreme Parts. This, when it arises from Passion, Fright, Surprize, or disorder of Spirits that way, is a thing slight, and not dangerous; but if deriv'd from a deeper root, and is the effect of some internal change in the Blood, by which the Spirits become disorder'd (as being vitiated in their very natures) it is often found to be a fatal fore-runner of approaching death.

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The second sort is a warm Sweat, which usually affects the upper Parts, as Head and Breast, not often extending downwards to the Legs and Feet; and this is usually only Symptomatical, little advantage being gain'd by it to the Diseas'd.

The third is a gentle, warm and universal one; during which, and by which the Diseas'd is reliev'd, so that the Morbifick Matter seems separating, and is evaporated this way.

By which it is manifest, that Sweats are extremely different, not only in their appearance, but in their very Natures and Effects: The two first of these being merely Symptomatical, the last only Critical: To encourage the former can be to little purpose; to check or hinder the latter, unsafe and dangerous.

XI. This further is to be observ'd in these three general sorts of Sweats, that arise often without any assistance from Art: That the first of them may be experienc'd in any state of the Body, without any preceeding Illness, in such Persons that have Fits, whether up or in Bed, whether encompass'd with Heat, or not; so that altho' that Juice that passes by Sweat, is most undoubtedly deriv'd from the Blood, yet the Blood seems here but secondarily affected. The Spirits, the Instruments of Organical Motion, being first disorder'd, as evidently appears by the pre-
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ceding and attending Symptoms. The two last seem to proceed from the natural Motion of the Blood it self, for being dispos'd for Separation, the Body being quiet and encompass'd with warmth it flows that way; for the Spirits are oftentimes in these Sweats, perceiv'd under no Confusion.

XII. And as unforc'd Sweats are observ'd to proceed from two so differing Causes, so may such as are forc'd by the power of Medicine. Thus Opium, that evidently hath a Power of quieting and composing the Spirits, will frequently produce it. To comprehend the reason of which is not difficult, if we but consider the circulatory motion of the Blood depend upon the motion of the organical Parts, and that being made and continued by the influx of Spirits, will of course be alter'd or disorder'd as the Spirits are effected: As is most notorious in Hysterical and other Fits, where the Pulse will be often observ'd to be as much alter'd as any other Organical Motions. The Spirits then being compos'd by the virtue of Opiates, and by that means, the circulatory Motion; and the Body lying in Bed quiet, unmov'd and warm, it can be no wonder if the Separations flow plentifully through the Pores of the Skin. But of Opium and its Uses more hereafter.

Whereas there are other Sweats that are procur'd by such Medicines, as manifestly exert their Powers in the Blood; and such
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are usually term'd Diaphoretics, (and sometimes when administred where there is suppos'd Malignity, Alexipharmics;) for these Medicines are observ'd rather to intend than abate the circular Motion of the Blood, and rather to encrease then lessen its Heat: And for this reason, when administred to Persons continu'd in Bed, where their Bodies are encircled with Warmth, it can be no wonder if sometimes some of the thinner and serous parts of the Blood will be forc'd to steem and evaporate by the Pores of the Skin. But in these forc'd Sweats, unless the Blood is before hand dispos'd, or prepar'd to part with, and divide from, what is peccant there, seems only to be wasted by such, nothing but the ordinary Serum, as the Success proves, there being no Benefit or Advantage perceived by them, but sometimes intollerable Mischiefs. It is true the first of these, *viz.* by Opiates, as it is in such Cases useles, so it is harmless, unless where the state of the Spirits is such, that they will not safely admit of thus quieting; but the latter by an untimely use, may even in the Blood it self, produce very unlucky Consequences, for being so much intended in its Motions by them, that some of the Serous parts are forc'd to pass the Pores; it will be a wonder if others do not so far press upon the Brain, as some-ways to disorder or affect that, whereby several unhappy Symptoms may be created,

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as what we call *Phrensies*, *Deliriums*, and such like. Besides, the Blood thus vehemently mov'd, its parts are so embarrassed, that all Separations become disordered, as is most evident in the visible ones. And herein may plainly be discern'd the difference in Sweats procur'd by what are term'd properly Diaphoretics, or sometime Alexipharmacs, from those made or encreased by Opiates. In the first the heat of the Blood is encreas'd, the Pulse intended, and the other ordinary Separations are for the most part lessen'd: In the latter the Pulse is rather depressed, the Heat not augmented, and the Separations rarely diminish'd; or however, if the Separations, during the Evacuation appear alter'd, upon the ceasing of that they usually recover their former state; whereas in the former the Disorder once made, is not so readily quieted.

XIII. There is another Evacuation in these sudden Diseases of the Blood that is become of marvellous use, and that is perform'd by the Application of Blisters, which although not perform'd by Medicines internally taken; yet because it is come into a general Use, it may not be improper to enquire what State of Blood it is, that seems to require a discharge to be made by Blisters. But that we may the better judge of the Benefits to be obtain'd by this Evacuation, it may first be convenient to enquire into the manner of their Operation. It is most certain the im-

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mediate Effect perceiv'd from a Blister, is the discharging some brackish salt Water; the manner of performing this is easily conceiv'd: For an Epispastic consisting of acrid, pungent and fiery Particles, being applied to the Body, and warm'd by that, such Particles soon penetrate and pervade the contiguous Parts, and do by that means form and make insensible Passages, for the thin and brackish Serum of the Blood to insinuate through and pass; but the Cuticula being of too close a Texture to give it any farther passage, it there stops, and fresh Serum continually flowing through the same Passages, it there forms a small Lake of Water.

It is certain in this Operation, that the Epispastic being fix'd upon a Part (by the Pain it there gives) does injure, alter and disturb that Part, by which it becomes susceptible of receiving some briny Water from the Blood, which by that means is discharg'd the Body. Whensoever therefore, the Blood is in such a State, as requires the discharge of this part of it, a Blister must be a proper Application. This being so in Fevers, where the parts of the Blood are too violently agitated, its Circulation too rapid, so that its constituent Parts are so mingled and confounded, that the ordinary Separations are less'n'd; it seems to little purpose to Blister, since the excoriated Parts can only receive and let pass what the Blood will supply; and that

that will not as yet separate or divide from what causes the Disorder; so that the whole is as yet Faulty, and therefore to no purpose to Evacuate a part; for by so doing, we may enrage but never appease the Disorder. On the contrary, in Fevers where the Motions are not much intended, nor the Separations comparatively lessen'd, but rather vitiated and altered; and yet by such the state of the Blood is not bettered, why should we Blister, since it is evident the Blood now separates, and that it wants not Vessels and Passages, whereby to exterminate the morbidick Matter? At least it would throw it off by some unnatural Separations, could it but once part, separate or divide from it. It is true by thus tearing of the Skin, we form new Channels, whereby Juices from the Blood may pass; but by such we do not help or assist it in its Separation, by which it can only extricate and disentangle it self from the morbidick or offending Matter, that gave beginning or continuance to this Disorder. And if the Separations by Sweat or Urine, are either encreas'd, or but in due proportion; to Blister is only to give Torment and create Sufferings without any reasonable prospect of Relief; by reason, the proper Passages discharge enough of the Serum, and if the morbidick Matter would pass with that, it is evident it would then spend it self by those ways; and if it will not, to what purpose do
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we apply them, since they discharge that? Besides, if the Blood can free it self of the offending Matter by its natural and ordinary Separations, why then should Art interpose in it? And if it cannot, such Applications being external to the Blood cannot force it: Since that must be done internally by the parts of the Blood themselves. For our making new passages for the Blood promiscuously to discharge Parts by, will not quiet or remedy these Disorders; because such cannot in the least assist the Blood in the separating and expelling the offending Matter: And when that separates, then comes in the true use of Evacuations; that such Separations may not return, or be lodg'd to continue or occasion Mischiefs. I write not this to condemn the absolute, but only the so promiscuous use of Blistering in Fevers, for it is evident there may be some Circumstances in such Diseases, that plainly indicate their use: As particularly in *Coma's*, for whether by them that incongruous Matter, that affects the Brain is Evacuated, or whether it only diverts what would supply it; neither of which seem reconcilable to Anatomical Discoveries: Or whether they only exuscitate and awaken the oppressed Spirits, by that smarting Pain that may be felt in the drawing or dressing them, which I am inclin'd to think, because those heavy Symptoms usually vanish

nish upon the smarting Pain, felt in the taking off the Skin; or which way soever it be, it is certain, such Symptoms are often remedy'd by them. As to their ordinary use, they may lessen the quantity of the *Serum*, when too redundant, they may divert unusual Separations or Defluxions upon a particular part; they may remove a Pain when permanent or fix'd, or they may, in the general, open a passage for Separations, that will not readily pass another way.

XIV. Having thus summarily inquir'd into the Evacuations that are but the Effects of Separation, that are in common use in Fevers, and reserv'd such that are made by the means of the Organical Parts, to the next Chapter, as Purging and Vomiting. And having shew'd their insufficiency to contribute any thing to the Cure of Diseases seated in the Blood; until such time as the Blood it self separates and expels such peccant Parts, as occasion'd such Diseases: Which peccant Matter, when separated, may then, by Evacuations, be discharg'd the Body. I shall now cursorily observe, in what Cases, and in what Circumstances Evacuations ought to be administred. But in order to this, I must beg leave to remind my Reader of what I have already prov'd, That all Evacuations, except Bleedings, discharge some one or more particular and separate Juice; and that all such Juices are only Separations from the
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Blood, and that when the Blood is disorder'd, these become so. That as it is these that are to be evacuated, so it is from these that we are to be directed as to the necessity or conveniency, as likewise in the choice of the sort or kind of Evacuations; altho', as to the expediency and safety of them in particular Cases, we ought to consult the Order, Strength and Temper of Spirits to be learnt by virtue of the Vital Motions, as Pulse, Breathings, &c. We may likewise consider, that the only Motive that can reasonably induce us to Evacuation, must be that there is some unnecessary or mischievous Matter to be discharg'd: And the only discovery or perception of such must be, that it appears to be already separated, or actually separating. These things rightly consider'd, will give us great light, what kind of Evacuations will be useful; for if the Separation is made by the means of such Vessels, Parts or Passages, whose Juices are to be discharg'd by the Motions of the Bowels or Stomach, it is clear it indicates Purging or Vomiting; but if not, other Evacuations, according to the ways it seems to tend. But by reason it may be sometimes dangerous to Purge or Vomit, because such Operations being perform'd by the Motions of the Organical Parts; the Spirits, as the Instruments of such Motion, may be by such means put into disorders, which may be unsafe and dan-

dangerous; and the Blood may be too much affected by them. And yet notwithstanding the Bowels containing the gross Parts of what we eat and drink, and Juices that are separated from the Blood continually driling into them; which therefore by too long a continuance there, may be again absorp'd or receiv'd in the Blood, or some way by their Steams and Emanations affect it, so as to increase or continue the disorder; wherefore to remove these Inconveniencies, and yet to avoid the mischiefs that may proceed by the former mention'd Evacuations: Art hath found out, and Men usually substitute another kind of Evacuation, whereby these Parts are gently solicited to empty what is contain'd in them, without that great danger, of being irritated into those violent disorders, that sometimes ensue upon the former: And this is by Glysters, which gently move the Bowels, without creating such mischiefs as are sometimes produc'd by Purg-
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XV. From what hath been said, I think it may concluded, that it ought not to be the Consideration of the Beginning, State or Declination of a Disease in the Blood that should regulate us in our Evacuations; but solely the Separations: And if some Evacuations have been usually experienc'd of greatest advantage, and most safety, in the beginning of these Diseases; it hath proceeded

from the reasons already urg'd, *viz.* That the Separations have not then been hindred; and not as to the state or time of the Disease: And if others have been most effectual in the declination it seems to have been in that the Blood begins to separate the Morbific Matter by those ways. For every state of an Acute Disease may be consider'd, as whether the Blood is then separating or not; and accordingly, in the general, to exhibit Evacuations, or to omit them: It is true, it doth not always follow, that the Blood is better'd by such Separations; the Disorders not ceasing, nor the Symptoms vanishing by them. Wherefore, to increase them seems to little purpose, and yet to suppress them may be dangerous; for such symptomatical Excretions, proceeding from some Fault or Change in the Blood, which, notwithstanding, is not better'd by them; to hinder such is only forcibly to detain what the Blood will not keep; and to increase them, is only to weaken Nature. But before I proceed any farther in this Enquiry, I shall beg leave to declare, That altho' I have us'd those general and positive Terms of Peccant, Morbifick, Hurtful or offending Matter, to be separated, or expell'd; before the Blood can recover from its Disorders, That I do not thereby intend to prove, that all such must necessarily proceed from the admission or mixture with it, of some such, antecedently exist-

existing. For I have only exprefs'd it so as being most agreeable to the Mind of Man to conceive some outward and real Agent operating in the producing all Vicissitudes and Changes in particular Substances. And likewise because I was unwilling to depart from that form of Speech that seems to me to have been most in use upon such occasions. But I do not thereby pretend to determine, whether the ordinary and natural state of the Blood may not alter; so as to appearance to have acquir'd a new one, that is, a Disease without any common external Cause, making or procuring it. For by what means soever these Separations and Evacuations originally proceed, is not at all material to my present purpose, since they may either way be of advantage or not. And since it is evident, by a thousand Instances, that the Properties, Qualities or Powers of particular Bodies, may be alter'd or chang'd without any sensible loss of Quantity, as I shall have occasion to shew more particularly hereafter.

XVI. But to return, the parting, separating, dividing or expelling peccant, morbid, offensive, or, if you please, malignant Matter from the other component Parts of the Blood; or which to us, who are excluded from the knowledge of it, is all one; the so disposing, altering or ordering the Parts of the Blood, that it may be better'd

by its Separations, is a Work purely Natural, as plainly appears, both from the Nature of it, and from Fact. First, from the very Nature of the thing; for it being internal, that is, amongst the very constituent Parts of the Blood it self; and they having, as I have already prov'd, a constant intestine Motion, it is plain, it must be by virtue of that, they alter or change Positions, Orders or Situation among themselves; and this disagreeable Matter to be separated from the other Parts, being mingl'd and dispers'd thro' the whole Mass, can never be dissever'd or parted from the others, but as it is expell'd by some Motion of the others. And this Motion being by the small Parts separately consider'd, which, by reason of their minuteness, are not to be guided or govern'd by us, and therefore must proceed according to their own Laws. It is true, we may, by some external violence, or by the adding incongruous Parts to them, increase this their Motion, and so perplex and hinder them in their regular and orderly workings; but yet we cannot so far determine them in their Effects, that is, their Separations, as to force them to divide from or expel what we please. By matter of fact it appears too evident, that neither Reason, Experience, Art, Chance or Skill, hath as yet discover'd any one Medicine that will regularly and certainly divide, part, separate

rate or expel from amongst the Parts of the Blood, those fatal, poisonous or offending Particles in Diseases that are call'd Malignant, Pestilential or Epidemical, as is most notoriously evident by the frequent Mortalities in such; I have only instanc'd in such, altho' the often insuccesses in most Acute Diseases, comprehended under other denominations, clearly prove it universally true. For notwithstanding we are able by internal Medicaments, assisted with external Warmth, effectually to procure a Sweat; and so by other means, other Evacuations; yet it doth not appear by the advantages receiv'd by them, that they do always exterminate peccant, morbifick or offending Matter. And since then Evacuations will not always perform this, I shall now examin what other Weapons we have to defend our selves against these unhappy Enemies.

XVII. Which that I may perform the more intelligibly, 'twill be convenient briefly to repeat what I have already prov'd, *viz.* That we are incapable of any certain knowledge of remote Causes, or their manner of operating in the forming or producing Diseases in the Blood; and that such being produc'd, all the little knowledge we can have of them, is obtain'd by our Observations upon its Motions and its Separations, somewhat assisted by the uncertain information of the Diseas'd. And if therefore it is by
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these alone, we know these Diseases, it must be only by these we can be guided in our methods of remedying them. When therefore the Indications are such, as do not require or permit of Evacuations, and yet an imminent danger is threatned by the Symptoms; it behoves us to have recourse to such other methods, as have been found by Experience, to have been of some use in altering the state of the Blood, without evacuating any discernable quantity of it. And of such so reputed, we abound, not only in a great number of Simples, but also in a great variety of Compounds; many of which have been recommended by great Authorities, as Medicines enrich'd with so excellent Vertues, as to be able to reprieve an expiring, and recal a dying Man. That they have their good uses is without any peradventure, and perhaps had Men been more wary in observing their regular Effects, and more sparing in commending their Vertues, we might have receiv'd greater Advantages by them.

But this the best and most useful part of Physick, hath as yet lain in a manner neglected: The greatest Care and Application of Men that have employ'd their Hours in Medicines, have been taken up in admiring the Successes that have sometimes ensu'd upon their Prescriptions, without much regarding their Operations, by which a multitude

titude of Uncertainties have been produc'd: For the Parts of the Blood being under a perpetual Fluxion, the Mass naturally undergoes a variety of Changes; by which means, as it sometimes declines from a natural and healthful, so at other times it recovers from an unnatural and unhealthful State. And Men not having strictly attended to what the Medicine does, have not been able to distinguish, what hath been effected by the Medicine, from what Nature her self does. This seems to be the reason, why no one Medicine hath, as yet, ever long continu'd in a flourishing Reputation: For notwithstanding several have been wonderfully applauded, us'd and admir'd for a time, yet all such have insensibly dropt in their Esteem, and at last been lost in their Fame. And if Men will persist in the same methods of judging of the Vertues and Efficacies of Medicines, they must for ever groan under the same uncertainty in their use: Because, what Men call the same Disease (and it is the Opinion of being the same, that entices Men to the use of the same Medicine) has always been observ'd to have very differing Events; and that whether they apply themselves to Physick or not: And therefore, if Men will only applaud or commend, reproach or condemn the Medicine, from the Event of the Disease; it can be no wonder if the same Medicines, in the same Diseases, have

have been by great Men very diversly represented : There having been no one Disease so universally fatal, but some have escap'd ; nor none so merciful, but some have dy'd. Whereas, if Men would but more warily observe, what variations arise by their uses in the motions of the Blood, what Changes succeed in the Separations, what Alterations are perceiv'd by the Diseas'd, they might not have so often deceiv'd themselves, and disappointed others ; as it is evident they have done, by thus only attending the success. For Medicines being relations to our Bodies, can only be good or bad, as they are so to that, which must be as apply'd : And since there can be no rule for that, but what is collected or inferr'd from what appears ; and nothing can appear but by the ways I have recited, it is plain, it must be by them we are to be govern'd, if we act like rational and intelligent Beings, and not at random, by putting all things to uncertain Chance. It is true, an exacter Judgment seems to be requir'd, in making our Observations for the discovery of the certain Operations of Remedies (that they only alter our Juices) than of such as make Evacuation ; because, in the latter, the effect of their Operations become immediately visible to us : Whereas the former exerting their Powers only in altering the Blood ; which being contain'd in the
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close Conduits of the Veins and Arteries, or perhaps in the dark and innermost Caverns and Recesses of the whole Body, where no Eye can pierce, nor no Hand can enter, it is not so easie to discover what really they perform: However, if we diligently but observe, the Alterations that regularly arise by their use, in such things as fall under our cognizance, we need not be so deceived.

XVIII. It is certain, in Diseases we call Fevers, Symptomatical Separations and Evacuations are sometimes so far enlarg'd, that the natural Strength is thereby impair'd, the Spirits languish, the Flesh waists, and the Diseas'd Person seems endanger'd by them: Wherefore they are, in such Cases to be lessen'd, hindred, or somewhat stopt; altho' we cannot be assur'd, that the ill state of Blood, from whence these proceed, will be by that alter'd or mended, because, by doing that we stem an immediate danger. But to do this, we must consider, whether these Discharges are effected by any disorderly motion of the Organical Parts, as may happen in *Loosnesses or Vomitings*; or whether they proceed from the ill dyscrasy of the Blood: If from the first, the rage of the Organ being quieted, or its Instruments strengthned, the Evacuation ceases: If the last, the Blood must be mended. It may likewise be observ'd in these kinds

kinds of Fevers, the state of the Blood sometimes shifts and changes; the Motions that were quick but not strong, and the Separations that were alter'd but not lessen'd, become gradually to acquire a contrary State; yet not to such a degree as to indicate Venesection, and yet the Disease continues. Here therefore we ought to have recourse to such things as will retard the Motion, and so again dispose it to separate. But to do this, perhaps Art hath not as yet discover'd anything more effectual than Barley-water, or some other simple distill'd Water, pleasantly acuated with the Juice of Limons, Oranges, Citrons, or such things. For altho' I dare not affirm, that these will directly retard its Motions, or extinguish its Heat, by assisting its Separations; yet this I can aver, they will not increase them, and besides, they are to most grateful. And if such are not kept up, and continu'd by an accession of fresh Matter, they will in no long time determine, by coming to a Separation, which if care is but taken to govern rightly, will, for the most part, terminate in the safety of the Person. But if such seem to continue too long, the Blood may then be somewhat dispos'd to Separation, by a gentle Bleeding, but this will be most effectual and safe, if it be gently spew'd out without Bandage; for then we may unloosen the Parts of the Blood, and give leisure to Separation, and
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make no disorders upon the Spirits of an almost dispirited Man.

XIX. But in that state of Blood where the Motion is rather quick than strong, and the Separations rather increas'd (and yet by such the Disease is not better'd) comes in, as I have experienc'd, the true use of Pearl, Coral, and all that Tribe, given in such Quantities, and in such Vehicles, as may be best suited to the Case: For to hinder or lessen Separations, appears to me to be their proper and certain Effects; if such proceed immediately from the Blood it self; for these Medicines seem to me to operate in these kind of sudden changes of Blood, much as Steel does in slow ones; both seeming to invigorate the Blood; altho' Steel does it much more violently, as I shall remark when I treat of it. For notwithstanding these Powders have been sometimes esteem'd Diaphoretics, and sometimes only Sweetners of the Blood; yet I do declare, I never yet cou'd observe any certain or regular effect of them, but that they did some ways invigorate its Motions, and hinder its Symptomatical Excretions; for as to their correcting Acidities, it doth not appear, that there is formally existent any such Quality there; for altho' it is most certain it is sometimes perceiv'd in the Stomach, or by the Parts appertaining to the Taste; yet that doth not prove but that it may acquire that quality after it is

is separated from the Blood, as I shall shew hereafter.

XX. There is another State of Blood to be sometimes observ'd in these Diseases, wherein the Crasis seems to be so very loose, that some of its Parts break and stagnate in their very Passages; the grosser Parts, its probable, coagulating, falling and stopping in the larger Vessels, whilst the thinner keep moving; and the consistent Parts being relax'd, such insinuate into them, and so gradually alter and change their Texture, which if near the Surface, is discover'd by Spots, Discolorations, and such like; but in other Parts, where the Pores are more open, or the Capillaries lie fit for it, it spews out in Bleedings, as in the Nose, Mouth, Gums, Intestines, and such like; whereas being hindred in the surface, by the closeness of the Skin, it forms Spots, and such like. For in ordinary Cases, I speak not of Pestilential ones, having never had any Experience in them, it is very rare to see these purple or blue Spots, but they are attended with these Bleedings; and in these the Pulse is usually quick and weak. However, in these or any other Symptoms, if the Blood plainly shews us, that its Parts are too apt to break, divide and dissociate, comes in the use of such Medicines, that have been compris'd under the Name of Alexipharmicks; which may be distinguish'd into two sorts or kinds.

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The one of which consists in such things as have likewise been call'd Astringents; which seem, in truth, to be only a sort of Cement, to tie the Parts of the Blood together, that they may not thus break and fall into Parts, and so run differing ways: For these do not seem to keep the Union among the Parts of the Blood, by intending or quickning the Circulation, but by binding its Parts, as it were together. Of these are to be numbred *Bole*, *Terra Sigillata*, *Rad. Tormentilli*, *Bistort*, and such like. These are esteem'd Binders, or Astringents; in that they hinder, as it hath been thought, the Bowels in their ordinary motion downward; but, as I suppose, this is only an accidental effect of them, the true and real one being the keeping the Parts of the Blood from dividing; which appears by divers Instances, for they hinder weakning Separations by other ways, as well as those by the Bowels, as is often unhappily experienc'd in Gonorrheas. Besides, they do not quiet the Motions of the Organical Parts: And why they sometimes hinder the Bowels in their Motions, proceeds from this, in that altho' they, *viz.* the Bowels, have a natural Motion downwards, by virtue of which what is contain'd in them, is discharg'd at the common passage of the *Anus*; yet they being susceptible of Motion, by irritation from what is in them, that their Motion will be quicker
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flower, as what they contain more or less irritates; which seems to depend upon the quality or quantity of the appropriate Juices that are separated from the Blood, and distilled into them; because it often visibly alters, according as these Juices flow into 'em or not; as particularly appearance in the hindrance of that Juice that is separated by the Liver; and may also be observ'd upon the return of Separations in some acute Diseases, for then the Diseas'd will begin to have natural and unforc'd Stools; whereas before the Bowels had no tendency to motion that way. So that these Astringents hindring the Separations of such appropriate Juices that should pass this way, the Bowels are not sollicitated by them, and their natural Motions being but slow, the contain'd Matter must necessarily indurate.

The other sort of Alexipharmacks seem only to exagitate its Parts, and intend its Circulatory Motion, and from that only hinders its breaking and dividing: Of this sort are the *Rad. Contrayerva*, *Serpent. Anglic.* *Zedoar.* and that Tribe, all whose regular Operations, seem only to consist in that they intend its Motions, and are by that means assisting in with-standing those Symptoms that seem to arise from its Coagulation, which is by their means thus internally hindered.

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The sum of what hath been here said is, that in such sudden Changes in the Blood, where the ordinary Separations are not lessened, and nothing contraindicates, particular Evacuations may be administered, there being then a promptitude and disposition for such, unless in such Case, where by a continuance they are become hurtful, then recourse is to be had to such things, as by altering the Blood may some way hinder, lessen or check them; by reason, altho' such Medicines do not perhaps separate or expel what is the cause of such Secretions; yet they may be assisting in withstanding such fatal Effects, so that Life may be by that means prolonged, and a farther occasion offer'd for their Extirpation. And that the parting, separating or expelling malignant, morbifick or offending Matter from the Blood, is a work purely natural; and that it is but trifling to pretend to evacuate it, until such time as the Blood can separate it, or some ways disengage it self from it.

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C H A P.

C H A P. VIII.

IT is become an almost universal Practice in the beginning of Fevers to administer a Vomit : It may not therefore be an useless Labour, to enquire into the Grounds and Reasons of that so receiv'd an Usage. But it will be difficult to form a Judgment of the Benefits or Mischiefs of this Evacuation, unless we first survey the Organs employ'd in it, the manner of affecting those Organs, and the Juices or Humours discharg'd by it.

Vomiting is an Action perform'd by the Stomach : For whensoever the Stomach throws up thro' the Mouth what was contain'd in it, the Man is said to Vomit.

In Vomiting, the Matter thrown up ascends, and therefore requires a Force to raise it : This Force is receiv'd from the Stomach it self; which being so form'd, as to be capable of contracting it self, necessarily forces up, when it contracts, what is contain'd in it.

The Fibres that compose the Stomach being by Nature fitted to be mov'd, being irritated by Medicines, forcibly contract the Stomach ; by which the Stomach with violence discharges what was in it : By that dis-

discharge the irritation ceases, but after some time repeats; and this by Internals returns, until the force of the irritation vanishes.

II. The quantity of Matter often discharged by Vomiting, and the manner of doing this by repeated distances, do plainly shew, that all the Matter thus discharg'd, was not contain'd in the Stomach before this Operation began; and what was not there before this Operation, must necessarily be brought into it out of the neighbouring Parts, during the Operation. The Organs, or Parts that can thus supply the Stomach with this Matter, must either be the Blood-Vessels, or the annex'd Intestines with the *Ductus*'s that are there inserted, *viz. Choledochus Pancreaticus, or the Vessels about the Fauces.* And the resemblance of the Juices often discharged by Vomitings, to those made or contain'd in the abovemention'd Vessels, do give a full Testimony that they are brought out of them; as appears more particularly evident, by the bitter Taste and yellow Colour (to be observ'd in such Discharges) which are proper to the Bile, or what is prepar'd in the Liver, and descends into the Intestines by a *Ductus* inserted below the *Pylorus*. So likewise there appears the same Evidence, That Matter is brought out of the Blood by this Operation; and that not only from the quantity (which can be supply'd by no other Fountain) but also in

that Blood it self is sometimes thrown up; and Separations made into remote Parts, are by this Operation remov'd into foreign Seats, brought back into the Blood, and here discharg'd.

From what hath been observ'd, it is evident, that whatsoever is discharg'd by Vomiting, was either in the Stomach before the Operation, or must be brought into it by virtue of its own Motion, during its Operation.

III. And it hath been already prov'd, that whatsoever proceeds from any of the secretory Vessels, must be deriv'd from the Blood; and that such Vessels are really passive in preparing their several Juices (being endow'd with no proper Motion whereby to do it) and therefore such their Secretions are always according to the Nature of the Blood (unless they are injur'd): And the Blood moving in Circulation by impulse, must necessarily run in larger quantity to the Stomach (during this Operation) than at other times; because by this violent Motion it receives a new impulse, and is there quicken'd in its progression. By all which it appears, that as the Stomach can have no other helps to supply it with such quantities of Matter as are discharg'd by Vomiting, than its own Motion; so that Motion alone appears sufficient to perform all that.

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IV. By what hath been observ'd concerning the Organs affected in Vomiting, the manner of the Operation, the Juices discharged the Parts from whence such are brought, and the Cause that moves and brings them into the Stomach, I think it will follow, that the only reasonable Motives that can induce us to this Evacuation, must consist in some of these things ; either,

1st. That there is some appearance of something already collected, or lodg'd in the Stomach, that should be discharg'd.

Or 2^{dly}, That the Blood being now dispos'd to separate, there seems to be a tendency of Matter that may be discharg'd this way.

Or 3^{dly}, To make a Revulsion, where the Blood hath made an unnatural and dangerous Separation upon some other Part.

Or 4^{thly}, Where the Secretory Vessels, that are within the reach of this Operation, are some ways obstructed or hinder'd in their natural Separations, or where their separated Juices are hinder'd in their passage from them.

These I take to be the only Cases that can, in general, indicate Vomiting. And if so, then the so promiscuous attempting this Evacuation in all sudden Changes of the Blood, is not only trifling, but may be dangerous : Trifling, when we would evacuate where is nothing that requires it ; Dangerous,

rous, in that the Blood-Vessels running in about the Parts affected in this Operation, must be variously press'd and violently affected; by which means the contain'd Blood must be strangely disturb'd and disorder'd; which is to increase a Disease that is actually founded in its disorder, as hath been observed those that are call'd Fevers frequently are: Besides, Vomiting being perform'd by the means of the Spirits moving and actuating the Organical Parts, those active Bodies being once irritated into such tumultuous Motions, do sometimes propagate and continue their Disorders into other Parts, from whence sometimes dangerous Symptoms do proceed; as may be inferr'd from Convulsions created by such; and even the Motions contributing to Life, are sometimes effected by it, as appears by the ensuing disorders to be found in the Pulse, Breathings, &c. It is true, these last surprising Symptoms seem only to proceed from them, when improperly administred; as for instance, when they are giv'n to such Persons as are under a weak Tone of Spirits, and are incident to Faintings, Fits, or so forth. This indeed I think may be acknowledg'd, That the Disorders made in the Blood, by the untimely use of Vomits, are not, in number or danger, equal to those made by Purgers; notwithstanding in their Operations the former seem more violently to affect the Body. For Emeticks
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exerting their powers in the Stomach ; by irritating that into violent Contractions, are naturally spew'd out by that very disorder they created ; and there being no known Passage out of the Stomach into the Blood, they are not admitted into that, whereby to cause any internal disturbance there ; so that what effect they have upon the Blood, is only externally upon its Vessels. But Cathartics passing the Meandering Guts, not only give the same external disorder to it by the Vessels, but likewise some Parts being often receiv'd into the milky Veins, are by that means mingl'd with the Blood it self, and so internally act a new part there ; from such Observations of the manner of working of Vomits, and what Parts are principally concern'd, and what accidentally affected, what Juices are discharg'd, from whence they can be brought, and where and when separated, we may, I presume, be safely govern'd in the true use of them.

V. Purgers in the Body of Man seem to begin their Operations where Vomits end ; for as they exert their Powers in the Stomach, so these theirs in the Intestines ; and altho' they both agree in this, that they perform their Operations by a Motion of the Organical Parts, yet are their determinations exactly opposite : For the first is made by an inversion of their Natural Motion, turning it upward, the latter by only hast-

ning and quickning it downwards, which is its natural course. The first seems by its effects, not to reach far into the Bowels, the second entirely to be perform'd there. The first makes a force upon the Secretory-Vessels, from about the Stomach upwards to the Mouth; the second from thence downwards. But both Evacuations being performed by a Motion of the Fibres or Membranes, composing the Stomach and Guts, which are seated in the Trunk of the Body; neither of them can discharge any Humour, Juice or Matter, but what is already contained in them, or what is brought to them, during the Operation; and what either *Stomach* or *Intestines* thus receive to be discharg'd, must either be supply'd by the contiguous *secretory Vessels*, or by the *Blood*; and neither *secretory Vessels*, nor *Blood*, could pour such quantities into those *Parts*, as are often discharg'd by their Operations, was they not solicited to do it by the violence of their Motion; because neither secretory Vessels, nor Blood, have any such Motion, whereby to be enabled to do it of themselves: For the secretory Vessels have no Motion proper to them, being only passive in Separation; and the Blood, altho' the Parts move amongst themselves, yet its progression is by impulse. Besides, altho' it appears certain, that some Parts of some purging Medicines do pass into the Blood; in that the Milk of the Nurse, when

when she hath taken Purges, will disorder the Child; and by what may be observ'd from Mercurial Medicines, when mix'd with Purgers, as likewise from Rhubarb, by that particular dye it gives the Urine, and in many other Instances that would be superfluous to enumerate. Yet it doth not appear, that the Discharges made by Cathartics, are made by any Colliquation or forcing Separations, by virtue of any parts of the Medicine being admitted into the Blood; but only by the violent Motion of the Intestines; by reason enlarg'd Separations procur'd by Cathartics, never out-live that Motion, upon which therefore they seem entirely to depend. For Separations from them are so far from being continu'd, after once that Motion ceases, that we find they are rather hinder'd and suppress'd, most Persons after Purgings being ty'd up. Furthermore, if such do not Purge or Vomit, they perform nothing, unless it be to disorder the Blood. It is true, these Discharges will usually be as the Blood is, more or less dispos'd to separate, supposing the Motions of the Bowels equal; and that it is probable, may be encreas'd by the admixture of something with Purgers, as in the Case of Mercurials; but then the Separation this way continues no longer than the Motion of the Intestines, and the quantity then discharg'd will be as that Motion is.

VI. We may likewise observe great variety of Juices discharg'd this way; for the Bowels being the ordinary Sink to the whole Body, several excrementitious Juices are distill'd into them; and they being stimulated into unusual and unnatural Motions, these will thereby be empty'd; so that this seems more extensive in its effect, than any other Evacuation: For Sweating will only excern what will pass the Pores of the Skin; Urine, only what runs thro' the Stranories of the Kidnies; Blisters, only what passes the exco-riated Part; but Purging, what is separated from many and very different Vessels: Besides, a large quantity of Blood, that naturally passes in its proper Conduits, about the Tunics of the Guts; and they being so much affected in this Operation, such of its Parts as are best befitted to pass into the Cavities of them, will be forc'd that way. And the Blood being by this means mov'd, must pass the nimbler, and in the greater quantity, as appears evident in violent Vomitings and super-Purgations; for the Blood being by such brought in so unusual a proportion to these Parts, the more extreme Parts become defrauded of it, whereby they want of that vital warmth they should receive from the circulating Blood, and so become cold, clammy and pale.

VII. In short, whenever the Blood appears proportionably to separate, and the Se-
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parations are alter'd or vitiated, it seems safe and reasonable to evacuate, except any thing contr-indicates; whenever such Separations are either in the Secretory Vessels, or in their Passages hinder'd or obstructed, there is a necessity for it. That of all known Evacu-ations, these two, *viz.* Vomiting and Pur-ging (except Bleeding) are most certain, as being perform'd by the Motions of such Organical Parts, *viz.* *Stomach and Bowels*, as have the opportunity of being immediately affected by Medicines (which are receiv'd into them) and so are the more certainly irritated and mov'd by them; and it is from this reason, these Evacuations are so readily produc'd. And as they are the most certain, so they are the most diffusive in their Ope-rations; affecting more Vessels, and so of course discharging a greater variety of Jui-ces, and so are of a more general use; there being but few Separations, whether natu-rally made by the Strainories, or preternatu-rally thrown upon a particular consistent Part, but may be some ways or other alter-ed, chang'd, diverted or lessen'd by one or both of these. But these two Evacuations being perform'd by the Spirits actuating and moving the Stomach and Intestines, it be-hoves us, in the administration of them, care-fully to weigh and consider the Condition, State or Temper of the Diseas'd; for other-wise we may, by such a pretermiſſion, create great Mischiefs.

VIII. And altho' these are experienc'd the most certain in their Operations, and the most general in their Use, yet, in many Cases, they must give place to Salivation, as most powerful and effectual, as being the more lasting, as I shall shew when I treat of it. If then these two Evacuations do absolutely depend upon the Motion of the Stomach and Intestines, as is most evident they do, being nothing but the effect of such, and not by any Colliquation, Breaking or Separation made by the Medicine, internally acting among the parts of the Blood; then the discharges these ways must entirely proceed from these motions, and not from any I know not what peculiar or specifick virtue of the Medicine. And the most that can be concluded from that, in these Evacuations, is, that all Purgers will not equally create the same violence in these motions; nor all Bodies will not be equally mov'd by the same Purgers, both which are notoriously evident in Practice.

C H A P. IX.

HAVING in a former Chapter distinguish'd Diseases, or unnatural Changes in the Blood, into two sorts or kinds; first into such as are sudden and violent, and so call'd Acute; and secondly, into such as are slow and languid, and so term'd Chronick. And the former being again sub-divided into continual and intermittent; and having briefly treated of the Continued, it remains upon me, according to my proposed Method, to speak something of the Intermittents. In which the Blood does not, as we are plainly taught by the Symptoms, continue in a settled, disorder'd State, but shifts and changes; sometimes we may observe it all in a hurry, which is what we call the Fit, which gradually wears off, and then it is for a time more quiet, calm and natural, and then again it falls into a Disorder; and thus these will interchangeably return at such certain and periodical times, as their returns may easily be fore-known, if by some irregularities they are not disturbed or alter'd.

II. I have already intimated, that there is no one known Remedy (nor perhaps, if we
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rightly consider the natural state of the Blood, never can be) that will certainly, safely and effectually cure, suppress or extinguish a sudden Disorder or Commotion, actually begun in the Blood. Because such Disorders being occasion'd by the accession of some disagreeable Matter into the Mass, cannot naturally cease, untill that Matter is again separated and parted, (which as hath been prov'd, is the proper work of the Blood it self;) for notwithstanding the Blood may be disposed to Separation by Medicinal helps; yet whether such Separations will be of any Advantage, depends upon the Disposition of the Blood to throw off the peccant Parts: For Diseases, or Disorders in the Blood, are only a sort of Strife or Collision between the Parts; in which Conflict, if the Parts that are Friendly, Homogenous, and agreeable to our Natures, prevail so far, as to expel and drive out the others, the Disease ends happily; but if such as are Enemies to our Nature are too powerful, the Consequence is fatal.

Whensoever therefore the Blood is continually supplied with new Matter, to support or continue these Disorders; it is manifest such are not to be suppressed, until what thus occasions them can be remov'd; because although such naturally end upon the Expulsion of what occasion'd them; yet being by the addition of new Matter renew'd, they continually repeat. But if the Blood shifts
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and changes its State, falling only into Com-motions at certain periodical Times, which often appear in very different and sometimes surprising Symptoms; which notwithstanding in such a determinate Time gradually go off and vanish; and then again at such intervals regularly return and repeat, be the distance of time, one or two Days, or be it only some Hours, between these Fits. In this Case we have a Remedy, if methodically administered, that will certainly, regularly and effectually retain the Blood in its natural State; and thereby prevent its falling into these periodical Disorders. The Medicine I here intend is the *Peruvian Bark*; a Drug, become of an almost universal use by some, and honoured with so noble a Character, as to be thought the only known Specifick: But notwithstanding by its certain and marvellous Effects, it justly deserves our highest Praise, yet I cannot be so uncharitably unjust to all other Medicines, as to allow it that Prerogative; by reason, I think, if we do not too much narrow our Views, we may observe some other Drugs to be as certain and regular in their Effects, if but applied with Caution and Judgment. But that I may avoid mistakes that may arise by the uncertain use of Words, I shall beg leave to explain in what Sense I here take the Term Specifick. But to do this so that it may the better suit to my Discourse, I must briefly repeat what

I have already said, *viz.* That all Medicines may be rank'd under two Heads, either such as Evacuate, or such as only Alter: That by the first somewhat is discharged the Body, so that quantity is lost; by the second only some Property, Power or Action is changed; and so only some Quality is altered. By *Specificks* then I only understand, an Alterative Medicine that Experience teaches us will certainly, regularly and effectually cure such a Symptom, or Symptoms, as are usually taken to constitute such a species of Disease, by only altering such Properties that make it, without any Evacuation. And herein I take to consist the difference in the sense of the words Alterative and Specifick: The former is to be taken in a more loose and general, the other in a narrower and more special Sense: The first may indifferently be used for all Medicines that will, by a continu'd use, some ways alter or change the Juices, but of whose Effects, we are not always certain; the latter may be taken for such an one, as hath been experienc'd effectually to remedy such a Disease, and so Men have little doubt of its Success. And although Evacuations sometimes ensue upon their use, yet such, by reason of their uncertainty, seem not to be of their genuine and natural Effects; but only accidental, not from the Operation of the Medicine, but from the Alterations in the Juices made by it; which now by the Vir-
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tue of that being again changed, come to make their usual Separations, which therefore may at first run off plentifully this or that way.

III. This being premised, the Cortex cannot, as I think, justly enjoy the Character of being the only Specifick; by reason we have other Medicines that are Alteratives, that may be experienced as certain in their Effects, if but as properly applied, as I shall have occasion to shew hereafter. And what hath mounted the so celebrated Cortex to such a height of Reputation beyond other Drugs, seems to me to consist in these Things.

First, In that its genuine and certain Virtues in the curing Intermitting Fevers, became as early known here in *Europe*, as the Drug it self; for it was that which first brought it hither; so that Men, from its first Use here, being assur'd of its Excellency, entirely depended upon it; and therefore have not so often confounded it in Compositions, nor so maimed it by Preparations, as is usually done by other Drugs; but have kept it to its native Purity, whereby its certain Effects are better discovered and more confirmed.

Secondly, In that its proper Use is in such Diseases as are easily observed, and may be readily distinguished and so are better known; hence it is duly and properly administred,
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and not so often misapplied, as most other Medicines are. And indeed this Advantage the *Bark* has above all other Specificks, that it is not often improperly given; for its true Use being in such a State of Blood, where there are Intermiſſions, or at least Remiſſions, which become so easily to be observed, that Men cannot without very great Inadvertency err: For whose Observations can be so unwary, or Understanding so dull, unless Men will wilfully shut their own Eyes, but may discern when there is a Fit or not; that is, but may plainly see that the Diseased is not always alike. And where that is (I speak of Diseases in the Blood) this noble Drug is a safe and soveraign Remedy, without any regard what the Symptoms are: As I have abundantly experienced.

Thirdly, In that the Symtoms that usually accompany these Intermiſſions or Remiſſions that are cured by the Cortex, are usually in their Seisures surprizing and sudden, in their Continuance violent, and in their Events dangerous; hence this Drug that thus puts a stop to them, comes to be more celebrated; whereas in the Use of other Alterative or Specifick Medicines it happens directly otherwise; For their Virtues were not so early known as the Things themselves; but have been gradually discover'd, and for the Reasons formerly urged have been differently represented, so that
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their certain and regular Effects are not well established; for altho' a long and continued Use hath advanced an Opinion of the great Excellency of some of them, yet such hath been the Custom, Usage or Fashion of so confounding them in Compositions, or so defacing them in Preparations, or administering them so uncertainly, that their native Virtues either have not been discovered or well distinguish'd.

Besides these Disadvantages, their Efficacies have been clouded by other Difficulties; in that they have the Misfortune to be esteemed Specificks in Diseases; where the Diagnosticks have been but imperfectly established; by which they are sometimes administered in very differing states of Blood; and therefore cannot produce the same happy Effects: From all which Considerations it is manifest, that notwithstanding other *Specificks* are as efficacious in their Operations, as the celebrated Cortex; yet their Characters cannot shine in the same lustre.

IV. The renowned Cortex seems to me regularly and certainly to produce but one constant and single Effect, which is the preserving, keeping or retaining the Blood in one certain and unaltered State; when it is disposed to shift and change by Intervals, and by this means all those *terrible Symptoms*, that appear in the *Fever Fit*, and which would have been formed in such a Period of

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Time, are prevented ; for the Symptoms that appear in the Fit, arising from the Commotion of the Blood, the Commotion being hindred, the Symptoms cannot appear ; for it is manifest the curing the Symptoms is but an accidental Benefit arising from the Use of the Cortex, because no one Symptom that appears in the Fit of an Intermitting Fever, is cured by this Drug, when it exists independently of such Intermiſſions. Thus neither that Horror or Rigor that sometimes may be observed in the Beginnings, nor that Sickneſs, Loathings, Reachings or Vomitings in it ; nor thoſe *Pains, Inquietudes, Uneaſineſſes, Deliriums, Phrenſies, Coma's, Convulſions*, or ſo forth, that do ſometimes accompany it ; nor that Heat, Thirſt, Burnings that are ſo common to it ; nor that Sweating after it ; neither one or more of theſe will ever be regularly and certainly remedied by the Cortex, but when they accompany ſuch Intermiſſions. And on the contrary, Intermiſſions will be cured by it, altho' they are not attended with theſe uſual Symptoms.

V. Alteratives taken in a more general, and Specificks in a more ſpecial Senſe ; for ſuch Medicines that cure Diſeaſes without Evacuation, it will be clear that their Effects or Operations muſt be bounded to one of the common Fluids, *viz.* Either Blood or Spirits, and cannot immediatly reach to any

any of the appropriate Juices ; by reason such Juices are only Separations of such parts of the Blood as will pass the *Secretory Vessels* ; and such parts having passed them, may be discharged ; but cannot be altered but by the Blood, from whence alone they are derived, whereas the Spirits, altho' separated from the same Blood, yet being the Instruments in Sensation, and of all Organical Motion, may and are immediately operated upon, not only by external Objects in Acts of Sensation ; but also by Medicine it self, as is particularly evident by the Use of *Volatile Salts*, *Fetid Smells*, and such like, in *Fainting-Fits*, and what we call *Hysterical Cases*, which being but applied to the Nostrils do presently betray their Effects upon the *Spirits*, by the hasty Change that is often perceived by the Diseased ; but of this and the Reasons more largely in the next Chapter.

VI. The noble and almost infallible Virtues of the renowned Cortex, solely depends (as I apprehend all other Medicines do) upon its true Use and timely Administration : For altho' it is properly besitted to cure periodical Disorders in the Blood ; yet it will not always perform this, for whensoever intermitting Commotions in the Blood, are excited from some Cause, without the Blood, the Cortex is but an ineffectual Remedy, as hath been often experienced by its unsuccessful Use in *Hectic Fevers*, which altho' usu-

ally occasion'd by some putrid Matter contain'd in the Lungs, yet frequently appear more violent at one time than other. The same may be observed concerning Disorders that seem to be originally derived from the *Spirits*, for the circulatory Motion of the *Blood* depending upon the Vibration of the Heart, and the Heart being moved by the *Spirits*, the Motion of the *Blood* will be altered and disturbed by the *Spirits*; and these sometimes falling into periodical Disorders, the Motions of the *Blood* become perplexed; This Commotion, altho' periodical, not being began by the *Blood*, will not be removed by the Bark.

By all which it appears, that the Efficacies of this so much renowned Drug, does not consist in any specifick Virtue of curing this or that Disease, or this or that Symptom, but only in detaining the *Blood*, from falling into Disorders: And that no Virtues are derived from it, unless it is rightly applied; and therefore is endowed with no more Efficacies than other Substances, since the same may be affirmed of divers other Medicines; for the Effects of *Opium* are as certain, that of some *Volatile Salts*, *Castorium* or *Fetid Gums* as sudden, some *Astringents* as regular, *Steel* as constant, and such like. It is true, these and several others are often-er ineffectually administred, for Reasons already urged; but yet notwithstanding these

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Difficulties may be overcome, if we will but apply our selves to proper Methods; and how far too much precipitancy, by an over-hasty desire to do present Service, may be a Bar to it, I only offer as a Thing not unworthy to be consider'd; for, perhaps, by too eager a Zeal of doing good, we may launch out into an Ocean of Uncertainty, before we have Needle or Star safely to guide us; whereas, sometimes, by a little Delay, Nature plainly shews which way she is to be reliev'd.

VII. This farther is very remarkable in this most excellent Drug, that it is always best in its pure and natural Dress, never as far as I could discover, bettered in its admirable Virtues, by any pompous Additions, or specious Compositions, but sometimes hindered by them; never mended by any elaborate Preparation or Chymical Process, but often robbed and spoiled by such; for as it seems not very likely that its secret and peculiar Excellencies should be strengthened by the pompous Addition of different Substances; so neither does it seem probable that its specifick Efficacies, which must necessarily flow from some peculiar Texture or Configuration of its minute Parts, should be bettered or improved by Chymical Processes, which must alter its Texture, and change its internal Constitution. For if all the Powers and Qualities of Substances arise from the

internal Constitution of their minute Parts, as Reason demonstrates, and Fact proves; then it is manifest, by altering or destroying the Texture, from whence the Power proceed, the Powers themselves must be altered.

And that the chymically analyzing Substances does this, is apparent, in that the Parts into which it is by this Art resolved, bear no resemblance to the Whole; for as the alteration of the Texture of a Substance brings a manifest change in the Qualities; so a change in the Qualities prove an alteration in the Texture. For if Substances differ from one another only in the Size, Figure, Motion, or Rest, Order, and Position of their minute Parts; and their Powers and sensible Qualities proceed from them; then it is plain if the first are altered, the second must be changed. And that this, in Fact, is so, clearly appears by Chymical Preparations, where the Original or Native Qualities or Powers of such particular Bodies, as are thus analysed, are often changed and lost; and new ones thereby acquired, extreamly differing from the former; as may be most notoriously experienced in most of the elaborate Preparations, whether made upon the Subjects belonging to the Animal, Vegetable or Mineral Kingdom; in many, if not in most of which, the sensible Qualities are not only altered by the Preparation, but also the Powers, Effects,

Effects, or Operations which they would have had upon our Bodies, as Medicines are also changed; some Things by these proceedings, becoming, perhaps, violent Emetics or Cathartics, that were in their Natures neither; or perhaps are changed from being such, to Diaphoretics, Alteratives, or Cardiacs; I need not produce Instances, the Thing being so well known. And this consideration enclines me to think, that no real Specifick can well be bettered in any of its native and genuine Virtues, by any elaborate Preparation; by reason such Virtues depending upon some peculiar modification of Parts, which, by dilacerating and dividing the Texture of the Substance, in order to resolve it, into what the Chymists call their Principles, must necessarily be changed: For altho' the *Spagyrist*s furnishes us with many excellent Medicines, yet the Virtues, Powers, Qualities and Faculties of such, are so widely different from what were in the Substances out of which they are produced; that they seem rather to be derived from the Fire, or Forms and Method of Preparation, than to have been pre-existent in such Bodies. For there appears, in a multitude of Chymical Preparations, no more remains of the native Properties of the Substance; than there does in Vegetables of the Earth and Water, out of what they are nourished.

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But notwithstanding this mutability in Qualities, and the very relation they bear to our Senses; yet such hath been the power of Hypotheses, that Men have renounced the Evidence of their own Faculties, (which every moment gives them Instances of their Fallacy) to subjugate their Understandings to them: For upon the late broaching an Hypotheses of *Acids and Salts*, Men have immediately consented, that not only Diseases in Humane Bodies, but also the Powers and medicinal Faculties of all Substances, were to be derived from that duumvirate. And this, notwithstanding their daily Experience does give them a full Testimony, that the Powers of Substances are not to be known or distinguished, by such transitory Proofs as sensible Qualities; there being no one Quality that entitles all Substances that partake of it, to the same Uses; for some Substances that are in Taste bitter, are Emeticks, whilst others of equal bitterness, are either *Cathartics, Hysterics, Stomachics*, &c. and the same may be experienced of all other Qualities relating to any other Sense, *viz.* either to *Colour, Smell, or Touch*.

It is from this Reason, that I have often wondred that divers learned and ingenious Men should so warmly contend about a Doctrine establish'd upon so precarious Principles, as that must be, that derives all alterations in Nature from sensible Qualities, (and
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so they do who build an Hypotheses upon *Salts* and *Acids*) which are apparently alterable. However the Contrivers or Defeaters of this Doctrine have more particularly narrowed it to Diseases; in the explaining of which they very much differ; for the Champions for *Salts* ignominiously reproach *Acids* as the Cause of all the Miseries that disquiet the Healths of Men; whilst the Defenders of *Acids* do load *Alcalies* with the same ignominy: And yet, which seems wonderful, neither of these Gentlemen have, as yet, proved the real Existency of either of these Principles in the Blood, which they accuse of being corrupted in Diseases. For, notwithstanding it fully appears by the *Taste*, that such Qualities sometimes reside in the *secreted Juices*, yet that is no Proof, that such were formerly pre-existent in the Blood; unless it was first proved, that sensible Qualities were unalterable, or that these were really so; for otherwise such Qualities may be acquired by the Secretion. And it appears pretty Evident in Fact, that they are so obtained, by reason the Taste, the Colour, the Smell, the Consistence of the several secreted Juices, are so extremely unlike the Blood. And if such Qualities that are thus believed to be the Causes of Diseases, only reside in the secreted Juices; then are they never to to be corrected by Medicines (altho' they may be evacuated) unless they are contained

tained in the Stomach, for Reasons already assigned.

Besides, how trifling it is to pretend to explain the Phœnomena of Diseases, by sensible Qualities that really have no Being out of our Minds; for remove but our Organs, and sensible Qualities vanish; the Substance in which they are suppos'd to reside, containing nothing beyond the Size, Figure, Position, Motion, or rest of its Parts? And surely thus to explain the Nature of Things by our Perceptions, is, in it self, preposterous. But if Men will continue to narrow their Reasonings for a dear Hypothesis-sake, why should not the Qualities appertaining to other Senses be equally admitted into the Causes of Changes in us, as well as those of the Taste? Why I should conclude, I know the Operations of a particular Substance, either upon my own or another Body, better by my Sense of Tasting, than by that of Seeing, Feeling, or Smelling; or why I should know the effects of a Body better upon me, because it affects my Palate thus or thus, than it does because it affects my Eyes, my Nose, my Hands, since my Mind equally perceives Bodies operating upon either of them: Or if we should admit the Palate here, the proper Instrument to be employed for this end; by reason what passes into our Bodies must go this way, and so to be tasted; and accordingly either to be admitted into

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us, or excluded; yet why only these two sorts of Tastes, to be thought the causes of Alterations in us, when we abound in so many others. And then why we should be exalted so much in our Opinions of these, as to assign the Causes of our Diseases to the predominancy of one of them; and of consequence its Remedy to consist in the administration of the other, when it is so notorious that the Medicines that are celebrated to be the most powerful in their Operations, do not appear to partake of either of them: For, I believe, the nicest Palate would be puzzled to discover in Native Mercury, Antimony, the Cortex, Opium, and such things, either of them. Besides, the most renowned Patrons of this Doctrine will be ashamed to own that the same Efficacies, Virtues, Effects or Operations upon our own, or other Bodies, will equally flow from all Acids or all Salts: So that by that they admit it is not from the Doctrine in the general, but to Experience only, they owe the Knowledge of their particular Effects. For as to what may be urged from that contrariety that is found in the very Natures of Salt and Acids, from that Strife or Ebullition that frequently arises between them when mingled or brought together, and how that they seem to destroy each other; I say, here is nothing uncommon, but happens (although not so much regarded) in several other Things: For instance,
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several Substances that are compounded and made up of very differing sensible Qualities, ferment and heat, and rise into Ebullitions, and then alter their sensible Qualities. Nay, do not all Qualities appertaining to other Senses, destroy each other, as is evident in Colours, Smells, and in other Tastes, in all which, by the admixture of two differing Ones, a third will arise, unlike to either?

VIII. But asking Pardon for this tedious Digression, it only remains upon me, before I conclude this Section, to speak a Word or two of a sort of Medicines that are in frequent Use in acute Diseases of the Blood, and are comprised under the Name of Cordials: And these seem not to be used as contributing to the real Cure of the Disease, but only as a necessary Means during the Disease, to comfort, refresh, and keep up the drooping and oppressed Spirits. It is not my Business to enter into a worthless Enquiry of the Etymology of the Word, and to shew how it refers to the Heart, but shall here take it in what seems to be the modern acceptance of it, for a Medicine comforting the Spirits. Our Spirits being separated from the Blood, they will in some measure partake of its Nature; as is obvious in Fevers, where the Blood being disordered, the Spirits soon become so too, as appears by the Symptoms that are proper to them. And then as the Spirits may be differently altered,

it is clear they may require very differing Medicines to be comforted or refreshed by. And this appears abundantly evident in Hysterical Cases, in which, sometimes, the most offensive Things are then Cordials; that is, the Spirits are really refreshed by such Things, that will disorder others. In short, there can be no universal Cordial but Things will be so as they are applied; which that it may not appear only a bold Assertion, I will further illustrate it by a notorious Instance: Wine and most spiritous and inflammable Liquors are generally esteemed Cordials, and are really so to most in Health, in that the Spirits are comforted, cheared and refreshed by them; and yet it is plain there is a Time when they are none; for they are so far from being Cordials to Men fatiated with such Liquors, that the more they are taken, the more their Spirits are oppressed, their Understandings confounded, their Stomach loathed, and their Strength destroyed; so that it is clear they are then, to such, no Cordials. And if Cordials are only such Things as refresh and comfort, it is plain, when we are stifled with Heat, and almost consumed with Flames, such Things as encrease and nourish such Evils can then be no Cordials; and yet few Things are esteemed Cordials, but what will do that; and if such Medicines in such Cases must be thought Cordials, I am apprehensive they may be some-

sometimes experienced to be fatal Ones ; for most assuredly then the best Cordial is to deliver the Spirits from their Oppression, which is not to be done by adding Fuel to the Fire, that is, by encreasing the Heat ; and for this Reason, in Fevers, Small-Beer, Barly-Water, or such innocent and inoffensive Liquors, will be often found more refreshing than all the pompous Processes, or chargeable Compositions of Pearl-Cordials, or Spirituous Juleps.

S E C T. II.

C H A P. I.

WE can no more doubt of the Existence of some *sable Fluid* that darts thro' the narrow Conduits of the Nerves, than we can of some Substance that is the Subject of Magnetical Properties, or of some Substances that produces Thunder and Lightning; since the Operations of the first in Sensation and organical Motion, are as manifest, as the last in the above-recited Effects; and the immediate Subjects of both, are equally invisible: For what can be more obvious than that the Mad perceives, and communicates Motion by the help of somewhat passing in the Nerves; when both Sense and Motion is abolish'd, whensoever this Passage is intercepted? And what can be more marvellous than that the Mind should distinguish so many different Perceptions, by the means of the same Spirits, being perhaps but only differently moved, or

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diversly modified in it, by outward Objects operating upon them?

II. By the two different Operations, *viz.* of perceiving and imparting Motion, we come to a knowledge of a twofold Use of this nimble Fluid, *viz.* as it is the Instrument of Sensation and Organical Motion; in the first of which the Mind perceives the Operation of outward Objects upon our Organs of Sense; on the second it gives Motion to a particular Part. In the first it seems only passive in receiving Advice from without, which must be by their Motion inward, that is, from the Organ to the Brain; in the second it is Active, by giving Motion by them, to this or that Part; and in this their Motion is outward from the Brain to the Part.

III. But to render what follows the more Intelligible, I must remind my Reader of what I have already observ'd, that the Motions of the organical Parts are of two sorts; the first of which I have call'd Voluntary, as being under the guidance of the Mind; the second Involuntary or Vital, as being exempt from it. The first is what is performed by the external *Muscles*, whose Motions we can regulate at our Pleasure. The second are in our internal Parts as those in the Trunk of the Body, which we cannot as we please alter or restrain. Witness the *Pulse*, *Motion* of the *Stomach*, *Bowels*, and so forth.

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And indeed all such that do immediately contribute to Life, are not in our Power to alter, hinder or suppress: And those motions that are inseparable from Life, seem to be effected by a Physical cause; for the Spirits that are prepared for these motions, are separated in a distinct Province of the Brain, and seem to descend in their Conduits, as they are separated from the Blood, to actuate the Organs befitted for these Uses: And the Blood is continu'd in Circulation by the Vibrations of the Heart, and the Heart is actuated and moved by the Influx of Spirits, and Life is seated in the Progression of the Blood; so that Life seems to run in a Circle! For the motion of the Heart is made and continu'd by the Spirits! And by the motion of the Heart, the Blood circulates! And the Spirits communicating this motion are prepared out of the Blood! So that the Spirits move the Heart, the Heart the Blood, and the Blood the Spirits; and in this Circle, so far as we are able to perceive, Life consists: Because all those Functions, that entitle a Body, to what we call Life, immediately varieth, when the motion of the Heart, and Circulation of the Blood, ceases. The Spirits are the active Instruments to continue this vital Circle, the Heart being only an Engine to work the Blood, and the Blood such a Liquor that must be moved to be preserved.

But these Spirits, altho' by Nature destined for the most noble Uses, yet being prepared out of the Blood, will partake of its Nature: For when the Blood is vitiated and disorder'd, these Spirits appear depraved, and their Offices and Operations are irregularly and imperfectly executed: And because Life and consequently Health, (which is only Life in Perfection) is founded in the above-mention'd Circle: And because a certain Harmony between the Spirits, Organs and Blood, is requir'd to continue that vital Circle, therefore if either of the Triumvirate fails, or is incapable to perform its Office, the Harmony suffers, and then Health is injur'd, and Life is gradually destroy'd: For if the Spirits are either depraved in their Temper, perplexed in their Order, or wanting in their Number, they become unfit regularly to move the Organs; from whence the Blood flagging in Circulation, alters its mixture: If the Crasis of the Blood alters, it becomes unfit to be moved, and incapable of yielding Spirits; and if the Organs is injur'd, it can neither receive nor communicate motion.

But because all the Spirits, as well those employ'd in voluntary as vital motions, are equally derived from the Blood; therefore when the Blood is depraved or alter'd, they both are equally incident to be affected with its Vices; as is particularly manifest in *Fevers,*

vers, in which the Spirits applied to both motions, appear in divers Instances equally affected; for those imploy'd in Sensation and voluntary motion, are found incapable of performing either of them regularly; as appears in that Perceptions are confused, from whence proceed Deliriums, Phrensies, &c. And Organical motions are prevented, as appears by the *Convulsions*, *Convulsive Twitches*, *Tremblings*, restless and uneasy *Motions*, &c. And those employ'd in vital *Motions* fail likewise in theirs, leave the Pulse, sometimes alters, Breath varies, and the *Motions* and *Offices* of the Stomach and Bowels change.

IV. Whosoever will but attentively consider what passes in himself, or but heedfully observe what happens to others, may easily perceive that there is a natural State of the Spirits; which must consist in some just Temper, Order or Continuity of them, whereby they are befitted regularly to perform their natural Offices of Sensation and Organical motion. By reason it is most certain that sometimes they do not regularly perform either one or the other; as we experience in those Diseases we call *Apoplexies*, *Epilepsies*, *Phrensies*, *Deliriums*, *Mania's*, *Palsies* and *Convulsions*; in all of which either Sensation or Organical motion is perverted or altered. And it is likewise certain, that we can discover nothing of the unnatural State of the *Spirits*, but as we can discern some Change,

Hindrance or Disorder in these their natural and regular Functions, Offices, Uses, or Operations, *viz.* of *Sensation* or *Organical Motion*; we having no other means whereby to learn any thing of their Natures but by these: So that by weighing and comparing these we are only taught to judge of their State, as whether natural and good, or unnatural and perverted, and their several Degrees.

V. But these Disorders in their proper *Functions* being in their Appearances very different, it may not be improper for methods sake to consider them under some general Heads, that they may be the better branched into such subordinate Kinds, as have been usually treated as distinct Diseases.

First, then they may be consider'd as when they are so affected as Sensation is lost, as in *Apoplexies*, *Lethargies*, and their degrees; or as when they are so alter'd or perverted, that it is deprav'd; that they make false or confused representations to the Mind, as in *Madness*, *Melancholy*, *Phrensies*, *Deliriums* and their degrees.

Or, secondly into such as violently affect Organical Motion, as in Convulsions alone; or that, with Sensation, as in Epileptical and Hysterical Fits. Or as when that is lessened or lost, as in Palsies, and the degrees.

And these again may be consider'd, either as an immediate effect of some perceiv-
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ed change in the Blood, as in Fevers; and then they are for the most part observ'd to be so entirely dependant upon that, that they are not usually then consider'd as Diseases, but only as Symptoms, vanishing as that Disease ceases. Or they may be consider'd as a Disease it self, that is, they are sometimes found when the Blood is under no discernible disorder; so that it seems only to make a depraved or faulty Separation this way, *viz.* by the Glands of the Brain: For it is well known in these Cases we can sometimes discern no other, the Diseased being in all other Respects perfectly well. Again, in the first of these Cases, when the Blood is under some obvious Change, such Diseases are usually continual: But in the last, where there appears none, they usually intermit, returning only by intervals, there being sometimes considerable spaces of Time between them. But those under the first of these heads, being usually attendants to *Fevers*, have been consider'd as Symptoms in them; and in truth being so absolutely dependant of them, I shall pursue their Consideration no farther in this Place; having already touch'd at that in the former Section.

VI. But these preternatural Affections of the *Spirits*, that are ordinarily consider'd as Diseases themselves, may likewise in the general be occasion'd two ways; either externally, that is, when somewhat without the

Nerve, someways irritates the Spirits into disorderly Motions, as may be instanced in Punctures of the *Nerve*, as likewise in *Worms*, &c. or as when they are hinder'd in their Passage by somewhat pressing the *Nerve*: Or internally, that is, when the Spirits themselves are someways alter'd or deprav'd, so that they are unfit for their natural Offices; or when they are tainted or hindred in their Performances by foreign and incongruous Parts passing with them into the Nerves (by external or internal I intend only in respect of the Nerve, not the Body.) If the Spirits are hindred in their Passage, by somewhat pressing upon the Nerve, all the Parts below that Pressure will suffer, or be depriv'd of their Motion; and accordingly the effect arising from such a Pressure, will be according to the Situation of it. It is from this Reason in the Case of *Apoplexies*, *Lethargies*, and such like; (which Dissections shew us have been occasion'd by some extravasated Blood, or collected Juice or Matter about the Brain, Men are deprived of Sense and Motion; and where the Symptoms that denote those Diseases, proceed from such a Cause) (which is very observable) the *Pulse* is commonly flow, and perhaps strong, and the Breathing deep, perhaps with *Stertor*. Whereas if loss of Sense and voluntary Motion, is from some Confusion, Hurry, Disorder or Oppression of Spirits, (which is also fre-

frequently term'd Apoplectical, but which usually differs from the former, in that the *Pulse* is small, unequal and perplex'd ;) there is not in such an equal Danger, such Fits usually wearing off. But altho' where there is some hindrance to the Motion of the Spirits, by some Cause external to the Nerve, the Effects of that can extend to no Parts but what are below such a Cause; which only can break off the Communication between the Brain and that Part ; yet when the *Spirits* being irritated into disorderly Motions by such a local Cause, those will be propagated to others, remote from that where first caused, as has been observed by universal Convulsions caused by a Puncture of a particular Nerve. It is farther to be observ'd that such preternatural Affections of Spirits that are thus created by a Cause external to them, usually continue until the Cause be remov'd ; not but that such consisting in Fits, that is in tumultuous Motions, must have their Degrees and Intermissions ; but cannot recover their former orderly State. Whereas such that arise from some unlike or heterogeneous Parts passing into the Nerves, or from some internal Cause, and so tumultuate and create Fits, have often great Intermissions, the Diseased being in all appearance well for a considerable time, and then returns ; for such Fits that return by intervals are those that are usually distinguish'd into several kinds, and

and made entire Diseases, and usually specified according to the Parts they begin in, or principally affect. And, which is very remarkable, such as begin in any of the voluntary or muscular Motion, are seldom preceded or attended with any visible Alterations, in the Separations or Motions of the Blood; and such are for the most part found of most difficult Cure; the reason perhaps, as having nothing to guide or direct us in it. But if they begin in any of the vital or involuntary Motions, that is, in some part of the Trunk of the Body, they may be frequently observ'd to be accompanied with some Fault in the Separations, and so the easier remedied.

VII. Fits; intending now by that Word a disorder or tumult of Spirits, seems to have been ranked into Sorts or Kinds, either according to their manner of Seizure, or the Parts first affected, or their manner of affecting, as may appear by the Significations of the several Words they are expressed by, *viz. Apoplectical, Epileptical, Hysterical, Hypochondriacal and Convulsive*. For I think if we do but carefully read what hath been writ upon this Subject, and warily compare it, with what we may observe in such Cases, that Fits have not always been denominated from any thing particular or different in the Symptoms during the Fit; but must have been distinguish'd from the Parts where they
first

first begin, or their manner of coming. For if this is not allow'd, I cannot apprehend how we can always distinguish between even *Hysterical* and *Epileptical* Fits, the same Symptoms in the Fit, being, as I have observed, sometimes common to them both, and that with equal Violence. This indeed has been remarkable to me in Fits; that notwithstanding it is so common to observe, that in such as begin about the *Abdomen*, that they will be so often accompanied with Convulsive Motions in the outward Muscles; yet I do not remember that I ever could observe a Convulsion began in the Muscles that ever affected the Contents of the *Abdomen*, or any part of the Trunk of the Body. But whether this is always so, I dare not affirm.

VIII. We may readily observe in our selves, that our Spirits are naturally capable of being moved three several ways (besides what they bring with them, as being separated from the Blood, by which their Influx into the Organical Parts subservient to Life is continued, which may not improperly be called their natural Motion, being inseparable from them during Life.) The first of these is from the Mind; thus I can now write or not, I can walk, stand, or sit still.

The second from outward Objects, for if such powerfully operate upon the Senses, the Mind cannot but perceive them: Thus if I now wound my Finger I cannot but feel
Pain;

Pain; if my Eyes are open, I cannot but perceive Light; if my Ears are not stopt, I cannot but hear Noise.

The third is internal to the Body; and of this the Mind perceives nothing, unless it creates Pain; thus my Pulse will sometimes alter, so will the Motion of my Stomach and Bowels.

And thus are they in the same ways susceptible of tumultuous and disorderly Motion (besides what likewise is common to them, by a depraved Separation from the Blood:) Thus,

First, Sudden and violent Passions of the Mind will sometimes bring Fits.

Secondly, Frightful, unusual and dreaded Objects affecting the Eyes, horrid and surprising *Noises* the Ears, and disagreeable *Smells* the Nose, will do the same.

Thirdly, Extraneous and incongruous Matter, irritating, disturbing or some ways affecting the Fibres within our Bodies, will do the like, as may be observed sometimes from Emetics or Cathartics, and likewise Worms in Children, and several other Cases, which would be superfluous to enumerate.

IX. This being so, I think it will not be difficult to discover the reason why Women in the general are observed much more incident to Fits that begin in the *Abdomen*, than Men: For the Uterine Parts, by which there, they are only distinguished from Men,
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being by the great Author of Nature so constituted, as to require and undergo at certain Ages, periodical Evacuations; by which means those Parts are subject to great variety of Alterations, both natural and unnatural; not only during that Time, as being ripe for Procreations, they, perhaps, cannot righteously enjoy it; but also when enjoying it, that they give Life and Being to the growing *Fætus*; for from these Reasons, the Uterine, and even the adjoining Parts, come to be differently affected; in that sometimes they are spewing out the menstrous Blood, and sometimes for want of that, they distil a contrary Juice; sometimes they are loaded with a *Fætus*, and sometimes they are uneasy for want of one; from these Variations the Nerves and tender Fibres being unequally pressed, the Spirits are frequently irritated into tumultuous and unusual Motions; which being, by the Communication of the Nerves, propagated to most of the Organs contained in the Trunk of the Body, do by that means create those surprizing Symptoms which are denominated Hyfterical. Whereas Men not labouring under these unhappy Circumstances, the Contents of the *Abdomen* not being liable to such uncertain and unequal Conditions, but remaining, as it were, in one settled and unaltered State; are therefore less incident to these unhappy Cases. And it is remarkable if Boys fall into Fits, it is usually about

about the Age of Puberty. And one thing farther, that the more disposes Women to these Fits, seems to be that they are bred up in too easie, unactive and sedentary a Life; so that their Spirits, for want of being sufficiently employ'd in Muscular Motion, become weak and thin, and apt to recoil and return back, and so more prone by the least disorder to tumultuate; besides the ill state of Blood that must necessarily proceed from such a Life, and so the Spirits farther depraved by that means.

X. This being premised in the general of Diseases appertaining to the Spirits, that they are nothing in themselves but some Change, Hurry or Tumult, by reason of which their natural and orderly Motions are perverted: That is, their proper Functions, Offices or Operations in Sensation and Organical Motion, (both which are but the effects of differing Motions,) are not regularly perform'd. Our next Enquiry shall be how far we are enabled to regulate, alter, compose or cure these Spirits, when they are thus preternaturally affected.

XI. But to do this we must consider, that a Disease, that is the effect of this Change, is not to be remedied, unless the immediate Cause can be remov'd. And the Causes of these Diseases may be very different, as hath been already proved; for they may be external to the Nerve; or it may be in the Spirits them-

themselves: Again, when in them, it may proceed from no real internal Fault or Change in them, but from some Fright, Surprize, Concern, or somewhat extraordinary and unusual, which suddenly or violently affecting them, creates Disorders among them: Or it may be in that they are really in their very Natures alter'd or chang'd, so that they cannot perform their Offices, as naturally as they ought. If the Cause then of Disorders of the Spirits, be without the Nerve, that must first be remov'd, before such can be cured; but if it be within the Nerve, that is, in the Spirits themselves, they must be alter'd before that can be remedied: If it be only the effect of Passion, Surprize or somewhat troublesome from without, they will for the most part quiet themselves, the Cause being remov'd; however, they may, without much difficulty be compos'd by Art. But if such Disorders are the real Effects of alter'd, deprav'd or vitiated Spirits; which are in their very Natures become unfit for performing their regular Offices; it is plain they must be alter'd or better'd, before such Diseases can be cur'd: And the Spirits being made and separated from the Blood, can only be mended or changed by the Blood: So that in order to alter or better the Nature of the Spirits; the Enquiry must be in what the Blood is faulty, and how to mend or alter that; so that in such Diseases of the Spirits,

rits, where the Blood can be discover'd under no disorder, the Cure is for the most part difficult: The reason of which seems to be, in that only this Separation by the Glands of the Brain is faulty; which if it arise from some Fault in the Vessels or Parts, transcends there our Knowledge or Skill to re-alter. And if from the Blood, we want a Clue to direct us in it. For I have prov'd already, that we can know nothing of the state of the Blood, but what we discover by the means of its Motions or Separations, which are here supposed not to be alter'd. But having in the former Section said somewhat of the Blood, and shall in the following one say more, I shall here pretermitt it. And observe that the quieting or composing the Spirits; the exfuscitating or stimulating them into Motion, the hindring or altering them in their disorderly Determinations, are, as I conceive, extremely differing from the altering, bettering or mending their unnatural and depraved State. For the former is frequently perform'd by Medicines immediately operating upon the *Spirits* themselves; but the latter is to be done no ways but by the Blood. But that this difference may be the better understood, I shall beg leave to give an Instance or two to illustrate it. Piercing and fætid *Smells*, but applied to the Nose, do so immediately affect the

Spirits,

Spirits, as sometimes to put by an approaching, or suppress a Fit actually began; so likewise a large Draught of cold Water will frequently repel a rising Disorder; yet neither of these better the *Spirits*, but only stifle or repress their rising Disorders. The effects of *Opium* are too nimble upon some Persons, to be communicated by the tedious way of the circulating Blood. Some *Steams* or *Fumes* will too suddenly intoxicate to be convey'd any other way. But these, I think, are sufficient Proofs that the *Spirits* may be affected immediately by Medicines, which is what I intended. And that being granted, the reason is manifest, why such Disorders of the *Spirits*, or *Fits*, that begin in the Trunk of the Body are much easier repressed, than such as begin either in the Brain or any of the muscular Parts. For in the first of these the Disorder begins in such Parts as are contiguous to the Passage in which the Medicine must pass, or at least communicate by the Nerves with them: So that the Medicine immediately of it self, or by its diffused *Steams*, operating upon the tumultuating *Spirits* hath an opportunity of suppressing or hindring their ascending Disorders; and being as it were above them, as being taken by the Mouth, or applied to the Nose, do by that means keep down, and repel the Tumult; for the *Spirits* hurrying in the *Abdomen*, the Power of the Medicine represses

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and forces back the retreating *Spirits*. Whereas in the other kinds, by reason of the distance of the Parts where they begin to tumultuate from the Medicine, the interposition of consistent Parts; nor no immediate communication between the Nerves here affected by the Medicine and the muscular Parts, they cannot Act or Operate upon them, but as they are convey'd by the Blood; in which, and with which, being so entirely mingled, blended and confounded, it must undergo new Changes, and perhaps acquire new Qualities; however, be it as it will, it cannot be so advantageously applied to the Nerve, where the Tumult is, as thereby to suppress or hinder the Disorder, as in the former Case: And all that can be perform'd by Medicine that way, must be by altering and mending the Blood, that the Spirits that are afterwards separated may be better'd; and this is not to be perform'd but by a long and continu'd Use: By reason here altho' the Disease is in the Spirits, the Cure is to be perform'd by long Ambages, a tedious going about, in altering and mending the Blood, from whence they are separated: And in doing this, it is clear we are to be govern'd by what we can observe from the Blood, without much regard to the *Spirits* that are affected, by reason they are not to be alter'd here, but by the Blood; nor the Blood to be alter'd unless it appears vitious.

And

And this seems to me to be the reason why *Castoreum*, *Fetid Gums*, *Volatile Salts*, and such Things, that steam forth strong and offensive *Smells*, are ordinarily administred so successfully in *Hysterical Fits*, that is, such as begin in or about the *Abdomen*; and to the same reason *Galbanum*-Plasters seem to owe their Efficacy; and not to any specifick Virtue of mending the *Spirits*, by reason they are rarely attended with such success in Fits that begin in other Parts: Nor to any magical, or I know not what Power they have to respect the Womb, and so have acquired the Name of *Hysterical*: For neither the Womb, nor any other Organical Part, hath any Motion of it self, but as actuated or moved by these nimble and active Ministers. Besides what farther shews and confirms the Truth of this is, that these very Medicines may be successfully administred to the contrary Sex; when such have the Misfortune to labour under Fits that begin in the *Abdomen*; and this is a Case not very uncommon, in which the Symptoms appear sometimes so very like those called *Hysterical* in Women; that if the impropriety of the Word, in that Sex, was not a bar to the Use of it, they would not be scrupled, by reason of their Conformity even in the strictest sense to have been term'd so.

XII. The Operations of these sorts of Medicine, upon the *tumultuating Spirits*, when they can be immediately applied to them, seem to be as regular, as even as that of the celebrated Cortex is in periodical intermissions of the Blood. But then they must not be administred at random, but only applied when the *Spirits* begin their Disorders in such Regions, as may be immediately affected by the Medicine; and when the Causes that excites these Disorders, if external to the Nerve, be removed; for as sometimes the Virtue of the Cortex is eluded for want of previous Evacuations, so may these be sometimes insuccessfully given, by an omission of the same, when the Cause is without the Nerve. Furthermore, as the Cortex is only a certain Remedy in disorders of the Blood, that return by Paroxisms; so these are only so in Tumults of the *Spirits*, that begin in the Trunk of the Body; and neither seem to extend their regular Effects beyond such. The Cortex is experienced but of little or uncertain Efficacy in Intermissions that seem to be deriv'd from some cause existing without the Blood; which gradually infecting it, so disorders it as to create by turns Paroxisms in it, as may be observ'd from Intermissions in Consumptions: For altho' it will sometimes at first Use, give some check to the Intermitting Heat, yet it will neither be of Continuance, nor any farther Advantage, by reason
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the removing such a Cause, does in no ways appertain to the Operation of that noble Drug; so these fæted Medicines, altho' they will give some check to Disorders, beginning in the *Abdomen*, yet if such are excited by some external Cause, they will not cure them, because it is not of their Operation to remove that. And this is not singular to these, but common to all other Medicines; for Medicines can only alter what then is, but cannot prevent what hereafter may be: Hence no Disease can be absolutely remedied, unless the immediate or conjual Cause can be alter'd or remov'd. And all alterative Medicines exerting their Powers upon one of the common Fluids, as has been prov'd, if the immediate Cause of such Disorders in either of them is derived from some extraneous Juice or Matter, separated or lodg'd without them, it is obvious that must be remov'd, or these cannot produce their genuine and desir'd Effects.

C H A P. II.

HAVING briefly prov'd, that we are able by Medicine to alter, hinder, repel or suppress these active and nimble Instruments of all animal Motion; the *Spirits*, in their preternatural and tumultuating Disorders, if they begin in such a region of the Body, wherein they may be immediately affected by the applied or administered Remedy, and more especially if it be so as the Medicine, being as it were above them, may hinder them in their Ascent: It remains now, according to what I there intimated to shew, that we are likewise able to compose and quiet them, to arrest and stop them when unruly, or if you please to chain and bind them up when they are ungovernable; and this not only to such as are the Instruments of *Sensation* and voluntary Motion, which naturally seem only to require Rest; but also to such as are the Ministers to involuntary or vital Motion; and therefore do incessantly continue that, without which Life could be no more; and this we can do not only contingently or accidentally, but regularly, constantly and certainly.

II. Notwithstanding a humane Body is so elegantly contrived, and so curiously fashion-

ed, as to be in all things adapted for Uses transcending other Beings ; yet it is but a lifeless and inactive *Machine*, until its *Wheels* are set a going by the darting Motion of the actuating *Spirits* ; for the *Spirits* to this small *Microcosm*, are like the *Sun* to the larger *Macrocosm*, the active Being that move and warm the lumpish Mass. For these *Spirits* are the Ministers of *Sensation* and Organical Motion, and are placed at all the Passes of the Body, to give the Mind notice of what approaches, and to execute her Commands in the moving the Body, for obtaining what is grateful, and for avoiding what is offensive. But this humane Engine, when either so worn by Age, or injur'd by other Accidents, as to become unfit for the Performance of former Uses, is then said to be Diseased ; and the Mind then perceiving the Bodies Infirmities, grows pained and uneasy ; and thus loaded and griev'd, is enclined to wish for more pleasing Abodes. But the Almighty out of Compassion to our Natures, hath thought fit to disclose a Remedy, to mitigate and assuage those Pains and Miseries, that he hath not thought fit to empower us by a wilful Death to remove : And this is the Divine *Poppy*, by whose kind Power the severest Pains are lessen'd ! *Poppy* ! that happy Plant, out of whose Bosom drops *Opium* ! And *Opium* the kind Drug that brings Comfort to the Diseased, Ease to the Pained, and

Of Natural Sleep.

Rest to the Wearied. This Drug then that procures those happy Effects for miserable Men, justly deserves the first Place in the Catalogue of Blessing, the Almighty hath prepar'd for our Bodies.

III. But that we may the better partake of the Blessings of this Divine Drug, it will be necessary to enquire by what ways it operates to produce these soveraign Effects upon us: To do this it will be necessary, that we first consider that our Lives consist only in a sort of chequering or dividing Time, between sleeping and waking, (that is between an active and unactive State) for there is always found a constant and successive Vicissitude from one to the other. In one, our Minds are always entertain'd with a continu'd train of Thoughts; our *Senses* are open to the Operations of external Objects, some of our muscular and organical Parts are usually employ'd. Whereas, in a deep and profound sleep, there is none of these; for either we do not think, or are not conscious of it, our *Senses* are closed, and our *Muscles* lie unemploy'd, and we remain in a state we know nothing of: All things being silent within, and nothing perceiv'd from without, there being as it were a Curtain drawn between Body and Mind.

But when our Spirits are freed from *Morpheus's* Chains, and a certain Twilight begins to break forth, and our Spirits begin to rouse
from

from their Rest, then the Mind begins to communicate with the Body; imperfect Perceptions arise, and confused and incoherent Ideas appear, and the various Parts of the Body have some Motion, and then the Man gradually awakes, that is, recovers entirely out of his unactive and torpid State: And as the perfect unactive State of a Man's Life, is call'd *Sleeping*; so the perfect active one is term'd being *Awake*; and the middle State between these, that is, neither the one nor the other, but partaking of both, is denominated *Dreaming*.

And as that Portion of our Lives we term sleep, is a privation of Sense and voluntary Motion; (which as hath been shew'd are the Functions and Offices of the *Spirits*,) therefore sleep formerly consists in the rest and quietude of the *Spirits*, and consequently the more profound the sleep, the more quiet the *Spirits*.

IV. This being thus premised, Experience assures us, that *Opium* or its Preparations will regularly and constantly, if administred in Quantity, someways so becalm and quiet the *Spirits*, arrest or hinder them in their *Motions*, as to compass them, or compel into that Quietude, we call *Sleep*, (and sometimes if improperly given into a fatal one,) sleep being only a rest or quietude of *Spirits*, in which their ordinary Operations cease. Here then appears the regular and genuine Opera-

Operation of *Opium* to bring a *requiem* upon the Spirits; and the Spirits during that *requiem*, ceasing from their Operations, the Mind is for a time depriv'd of Communication with the Body, and of course such Actions cease: And from this Source are all the astonishing Effects of *Opium* to be deriv'd. For from this Operation Pains are quieted, Evacuations perform'd by organical Motions are suppress'd, Coughing is hindred, the Spirits are sometimes refresh'd, and sometimes injur'd and oppress'd, Sweatings are procur'd, &c. and the Blood is often brought to circulate more equally.

But that all the stupendious Effects vulgarly attributed to *Opium*, may more plainly appear to flow from that single Operation of composing and quieting the Spirits; I shall shew that all those Evils or Diseases that are so happily cur'd by *Opium*, are really founded or form'd in some rage, tumult or disorder of the Spirits

It is very manifest, that some Evacuations are often encreas'd by the Use of *Opium*, whilst others are as often suppress'd and hindred by it; and yet these so differing Effects are produc'd by the same Operation; because as it hath been already demonstrated, some Evacuations are perform'd by organical Motion, whilst others only flow out of the Blood without that help: The first of these *Opium* hin-

hinders; the second it often encourages, and all from the same Reason.

In the first of these, the Spirits being by *Opium* quieted, the Violence of the organical Motion ceases, and so the Evacuation that was effected by that Motion, vanishes.

In the second, the Blood being disposed for Separation, does more freely dimit its Juices, thro' the Pores of the Skin, when the Spirits are quieted, and so the Pores more dilated.

Thus in the first of these, *Opium*, under which Term I now comprise *Laudanum*, and all Preparations from *Popies*, will often lessen and stop Vomitings, in that it quiets the enrag'd Spirits, which violently actuate, and forcibly move the Stomach into those Motions and Contractions, by which it is perform'd; for they, *viz.* the Spirits, being arrested or hindred in their Motions; Vomitings, which are only the Effects of such in the Stomach, must cease. The same likewise is perform'd in Loosnesses, the Rage and Motion of the Spirits in the Bowels being appeas'd, the Evacuations downwards, which is made by this, must of course lessen and stop. Coughing likewise is a violent and unusual Motion, occasion'd ordinarily by some unwonted Separation from the Blood, which being extraneous and disagreeable to the tender Fibres appertaining to those Parts, irritates them into that Motion we call Coughing; by which that very Matter that
caused

caused it, is usually removed from the Part where it was offensive, and so is sometimes brought up by spitting, which is a frequent effect of it: Now when the Spirits are composed, quieted, or as it were, stupified by this Medicine, they are not so sensible of the Irritation, nor so easily fall into that Motion. And that this is the reason of their stopping Coughing, is evident in that Coughing usually returns after the Efficacy of the Drug is spent; and then is ordinarily discharg'd such Matter that way, as by reason of its Quantity or Thickness, plainly discovers it hath been sometime a collecting, and had lodg'd before it was discharg'd; because altho' the Separation of that Matter continu'd, that caus'd the Cough, yet the Fibres not being so susceptible of Irritation, the separated Matter lodges, and the thin and watery Parts steeming and evaporating with the Breath; what remains to be brought up by Coughing, must become the more thick; which when the Virtue of the *Medicine* is spent, or the Quantity of the Matter so far encreas'd that the Fibres are again solicited into that Motion, is then brought up that way; by all which it appears that these are only the effects of the Spirits thus quieted.

VI. But on the contrary, Evacuations that are the immediate effect of Separation, are rather encreas'd than lessen'd by it; thus

Sweats

Sweats are often caused by the Use of *Opium*, and sometimes the quantity of Urine is enlarg'd; the reason of which seems to be in that where the Blood is disposed for Separation, the slower it moves, the more it separates; and its Circulatory *Motion* depending upon the Vibration of the Heart and Vessels, and that being made by the Influx of *Spirits*, this *Motion* will be as that Influx is. And that these Evacuations proceed from that Reason, seems probable to me, in that these very Effects may be and are in some other Cases produced by the means of some Affection of the *Spirits*; as is most notorious in those Sweats and profusive quantities of Urine, that do frequently accompany Faintings, Swoonings or Hysterical Fits. Besides there is another reason why Opiates so often occasion Sweats, for being usually given in Bed, in which posture Men commonly compose themselves for sleep, and the *Spirits* being quieted by the *Medicine*, and the Body continuing in one unmov'd and warm State, it can be no marvel if it sweats; since we may observe but few Persons that lie warm, and sleep quiet and sound, but will then gently perspire by the Pores of the Skin; because those Passages being open, not as occluded by any external Cold, and the Blood being invited by this outward warmth to move freely that way; and the cutaneous Fibres perhaps, by the same reason, relaxed,
do

do thereby give a greater Freedom for the *Serum* to pass.

VII. This is farther to be observ'd in the use of Opiates, that altho' they undoubtedly some way compose and quiet the *Spirits*, yet that happy Effect is not often of any long continuance, in that they do not better or mend the *Spirits*, but only quiet and compose, and so only make a Truce, but no lasting Peace; (unless when the Indisposition is entirely from some present Disorder in them, but not from any Corruption or Depravity of them:) For if it be from any other Cause that must first be remov'd. Hence it is when their Disorders are created by somewhat external to them, the Virtues of Opiates are uncertain, and not lasting, and are often ineffectual, and sometimes dangerous, unless Evacuations precede their Use.

The same may be observ'd concerning the Use of Opiates in acute Diseases of the Blood; for altho' in such the *Spirits* frequently fall into great Irregularities, as appears by the *Delirium*, *Phrensies*, *Convulsive Twitches*, *Tremblings*, &c: yet such their *Anomalies* arising from the depravity of their Natures, as being now prepar'd out of a vitiated Blood: Altho' such their Disorders may be for a short time, by the Use of Opiates mitigated, because the *Spirits* being quieted, such Effects that proceed from their Inquietude must naturally, during their Rest, cease; yet they return, as
not

not being to be remedied, until the corrupted Blood is better'd ; and that once performed, they quickly vanish.

The Truth of this appears most evident in *Fevers, Small-Pox*, and such Cases ; where Opiates, if given in quantity, will have their natural Effects, yet by them the dreaded *Phrenses, Deliriums, Convulsive Tremblings*, are never, as far as I could observe, cured : It is true, when the Blood begins to alter, and gradually to recover its former state, which usually appears to us by the happy, although small, Alterations that may be observ'd in the Motions or Separations ; Opiates then administred will assist these, for reasons already assign'd, and so will as it were at once perform that which otherwise might have requir'd more time.

VIII. The so general Administration of Opiates in the *Small-Pox*, being a practice of a modern date, introduc'd with a Regimen somewhat different from what had been formerly used in that Disease, hath often given me an occasion seriously to reflect how far the genuine Symptoms in that Disease may reasonably induce us to the so promiscuous Use of it : But that I might not proceed precariously in this Enquiry, I tied my Observations and Reasons to such Things only as are common, obvious and certain. There is perhaps no one Disease, wherein Men seem better agreed, what goes to constitute its Essence

fence (pardon the Word) than the *Small-Pox*; by reason consisting in some external Appearance, it becomes of it self under the Cognisance of our Senses, so that what it is we have a direct Knowledge. Neither is there any difficulty or doubt from whence these Pimples or Eruptions upon the Skin (that are what to us constitute the Disease) derived: Their nature, colour, manner of Appearance, their Growth and Maturation abundantly proving, that they are separated from the Blood; their being in Truth no other Juice, from whence they being so universal, can be separated. The only Question then is, how the Blood is moved, to make this peculiar Separation by Pustles in the Skin, (which to us makes the *Small-Pox*?) To solve this, we must consider, that the Blood being made up of dissimilar Parts, is always despuming it self by several ways; that as the Juices separated from the Blood are very different, so their Quantities vary according to the Disposition of the Blood, to throw its Parts by this or that way: That therefore when the Blood is tainted or infected by any poysonous; or disagreeable Matter, that will not pass out by such ways as the Blood usually despumes it self by; and yet the Blood is powerfully enough to expel it, it must lodge upon some other part; the Poyson or Infection receiv'd that produces the *Small-Pox* being befitted to remain in the
Skin,

Skin, does there gradually form those Pimples, that we call the *Small-Pox*.

For this is very observable in that Poyson that produces the *Small-Pox*, (for I cannot but call it so, being so often receiv'd by Infection) that its natural Tendency is to the Skin, as appears not only by the Eruption of the Pimples, but by the Disposition to sweat; and therefore when it takes that course only, the Diseased is rarely in danger.

Thus far then, I think, is certain, that the Blood is first affected, that these unnatural Eruptions upon the Skin, (that to us make the Disease,) are separated from thence; from whence likewise all natural Separations are made: So that the Blood in this Disease being corrupted, what proceeds from that, will likewise be someways alter'd or depraved.

But that we may the better reason concerning the Use of *Opium* in this Disease, it will be proper to observe what steps Nature takes in the forming of it. Persons then infected with this Poyson, usually complain of a pain in the Head or Back, and sometimes Sides, seem somewhat disorder'd and unquiet, and have a frequent Tendency to nauseat or vomit; all which Symptoms upon the Eruption of the Pustles gradually vanish, especially if there is a tendency to sweat, and the Pimples appear large and separate. But if the Pimples are very small, appear in Clusters,

sters, and no tendency to sweat, the preceding Symptoms, (which are usually in this Case more violent,) do not so entirely abate upon the Eruption of the Pustles, as in the former; by which it is evident, as the Poyson in the first Case is perfectly expell'd by the Pimples; so in the second it is but imperfectly thrown out that way.

IX. In both these Cases Nature endeavours to expel the Poyson by the Skin; in the first she entirely performs it, in the second but imperfectly: However, this is the way she tends to do it; and therefore when she effects it this way, she is deliver'd from those Mischiefs that otherways ensue. It is from this Reason, that wheresoever there is a Propensity to sweat before the Eruption of the Pimples, there is rarely any danger: Because notwithstanding the variolous Poyson does not evaporate by the sweat, (for it remains in the Skin to form Pustles) yet the sweating is an Indication that it takes a just and natural Course.

Whereas, when the variolous Poyson take foreign and unnatural ways, by which it cannot be exterminated, as when it tends to the Stomach, and so creates immoderate Vomitings; or to the Bowels, and so gives Loosnesses, or when it fixes in some particular part in violent Pains, or when it so breaks and coagulates Blood, that it cannot be separated: Notwithstanding some Parts pass to
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the Skin, to shew the Nature of the *Poyson*; yet in that it doth not take its natural Course in being entirely separated by the Surface, the Diseased remains in a manifest danger.

For the variolous *Poyson*, or at least a great part of it, remaining in the Blood, (as not being separated by the Pimples) begins to act new Tragedies; for not being to be expell'd by the Pimples, (the way it seems naturally to be befitted for) it is thrown upon the *salival Glands*, Hands and Feet, which being loaded with it, swell; and if the Blood is able to exterminate the whole *Poyson* by this second Separation, (which appears by the abating of the Symptoms, and by the manner and continuance of these Swellings) the Diseased may be in safety, notwithstanding any Circumstances in the *Pimples*; because Nature having found another way to separate the *Poyson*, the safety of the Diseased does depend upon that second Separation.

From these ways, that Nature observes in forming the *Small-Pox*, it is evident there are but two Intentions that are especially to be aim'd at in that Disease.

The first regards the Separation of the *variolous Poyson*; that when it is receding from the Blood, it may be directed to those Parts, where it is best accomodated to fix.

The second is, that when the *Poyson* is thrown upon a particular part, it may be prevented from returning into the Blood.

X. To answer the first Intention, it is plain *Opium* is a uselefs Remedy; because the Blood tainted with the *variolous Poyson*, endeavours to deficate it self by the *Pimples*; and when it is unable to do it that way, it is attempted by the *Salival Glands, Hands and Feet*: However, the separating poysonous, or hurtful Matter from the Blood, is perform'd by the intestine Motion of the minute parts of the Blood; whereas *Opium* only quiets the *Spirits*; and therefore altho' *Opium*, by affecting the *Spirits*, may someway affect the Circulation, yet it cannot the natural Motion of its parts, by which alone the Separations are perform'd.

To answer the second Intention, no doubt *Opium* may be of very great Use, because the *variolous Poyson* once deposited either in the *Pimples*, or the *Swellings*, cannot easily recede, and so return into the Blood, unless it is forced from its Seat by some tumultuous organical Motions, which a seasonable Use of *Opium* may prevent.

But notwithstanding the *Small-Pox*, observing their regular Periods, do not often indicate the Use of *Opium*; yet there are a great many Accidents in this Disease that entirely require its Use. For when the Blood is continually solicited by the Motion of the Stomach

mach or Bowels, to make Separations those ways, which are discharg'd by Vomitings and Loosnesses, and so is diverted from throwing the *Poyson* the natural way by the Surface, or when some already lodged there is by these Motions recall'd.

It is certain if these Motions are not quieted by *Opium*, that the *Poyson* may flow in its right Channel, fatal Effects will soon ensue.

It is urg'd by some in favour of the continu'd Use of *Opium*, that it must be of wonderful Advantage in the *Small-Pox*, in that it procures Sweat, which they say seems the natural Course by which the *variolous Poyson* spends it self, by reason the *Small-Pox* are never dangerous, where there is a disposition, upon their Separation, to sweat.

To which may be answer'd, that altho' *Opium*, for the Reasons already urg'd, does sometimes produce sweat; yet Sweats, as hath been prov'd, unless the Blood is first disposed to throw off its hurtful Parts that way, only discharge a *Serum* from the Blood: And to do this in the *Small-Pox*, is by those Persons that so highly applaud *Opium*, thought unsafe: Besides in such Cases where there is any danger attending that Disease, the *Poyson* takes another Course, *viz.* by the *salival Glands*, &c. and therefore to encourage sweating, is to invert the Course of the Disease.

But notwithstanding in the regular *Small-Pox* there are no Symptoms that require the Use of *Opium* in the beginning of the Disease, yet in the progress and height of it, it is experienced to be a useful Remedy, by reason the Disorders of the Spirits, which are sometimes occasion'd by the Pains and Uneasiness, accompanying the maturing of the *Pimples*, (by which what is called the *secondary Fever*, is often occasion'd) is prevented; for otherwise the *Spirits* being disquieted by the heat and throbbing of the *Pimples*, so hurry the Blood in Circulation, that the deposited *Poyson* in the Swellings are again licked up, and so the Blood being again poyson'd with it, the most fatal Symptoms are produc'd: Whereas a seasonable Administration of *Opium* may keep the *Spirits* in that, and quiet, as to prevent those Mischiefs.

There are many particular Cases in this Disease as plainly require Opiates, as in violent Pains, or where Evacuations, that are made by the organical Parts, are improper or dangerous, so that there is a necessity to lessen or stop them; but by their so promiscuous Use, I could never yet observe any real Advantage. But on the contrary, that they have so dull'd and stupified the *Spirits* as that they would not be irritated into Motion, when it becomes necessary, in order to discharge that nasty *Slough* and *Phlegm*,
that

that being lodg'd about the *Fauces*, should have been discharg'd by the Mouth. Hence sometimes have been deriv'd those fatal rattling *Stertors* in Breathings, those Passages being so lin'd and stufed with this foul Matter that becomes more thick and tenacious by its continuance, for want of a Motion whereby it might have been excreted. Besides, the *Spirits* being by that great Change and Corruption of Blood become unfit regularly to perform their Offices, their Motions being weak, may be so oppress'd and chain'd up by Opiates, as never to free themselves from such Fetters. In short, the so plentiful use of Opiates may give some Reputation to the *Physician*, by reason it gives ease to the Attendants, but not always safety, altho' it gives sleep to the Diseased.

XI. It is not improbable *Opium* hath undergone the common fate of other Medicines, in that its regular and certain Operation have not been distinguish'd from its accidental Effects. For when a happy Effect hath succeeded its Use, it hath immediately been attributed to its genuine Operation, when perhaps it flow'd from a very different Cause, and indeed in this it seems to have out-stripped most other *Drugs*; for what uneasie Symptom is there appertaining to any Disease, but may have been experienc'd to have been eased by it; for its certain Efficacy or Operation, consisting in a power of quieting

the *Spirits*, by which means *Pains*, *Uneasinesses*, *Inquietudes*, the usual *Attendants* of most Diseases, are mitigated: The Diseased, who always covets present Ease, and commonly measures his Safety by what he feels: And his Friends, who usually judge of it by his Rest, or want of Complaints, generally commend and approve that Medicine that performs these great Things, and desire its Repetition; when perhaps in some Cases by so doing he may be by easie steps remov'd by each Dose a degree nigher the Grave. For these reasons I am apt to think *Opium* hath been oftener misapplied than any other *Drug*.

XII. I shall only say one thing more of this sovereign *Drug*, that it is by Nature so divinely prepar'd, that it is not to be better'd in its specifick Power of composing, and giving a *requiem* to the *Spirits*, by any pompous Process, tedious, artful or elaborate Preparation, but it may be by such lessen'd and almost stripp'd of it; and this under that specious pretence of freeing it of its malignant Qualities; whereas these consist only in its Power of quieting or chaining up the *Spirits*, so that to divest or spoil it of that, may certainly make it a very harmless, but yet at the same time a very useless Remedy. For all as can be expected by its *Preparations* seem to be principally, if not only, in a conveniency for a form of giving it; besides,
that

that it doth not readily dissolve in all Liquors, for which reason they ought to be adjusted, that it may the better communicate its Effects.

C H A P. III.

BUt to return, from whence I have made so long a Digression, to a farther consideration of the natural, regular Functions, Actions and Operations of the Spirits, that by duly weighing and comparing them, I may be the better enabled to explain their preternatural *Changes, Tumults and Disorder*; for without a right understanding of the former, the latter are not to be comprehended. But that I may not nauseate my Reader by a tedious Repetition of what hath been said, I shall here only remind him, that all the Actions, Functions and Operations of the Spirits, are but the Effects of their Motions, which in respect of their *Determinations* are but of two sorts, the one of which is inward, the other outward, that is, one is from the *Organs* to the *Brain*, the other from the *Brain* to the *Organs*; and that by the different Modifications of these, all Sensation and organical Motion is

is perform'd ; so that, when the Motions of the Spirits are regular, those Operations are just and natural: And on the contrary, when the Spirits are depraved, these will be perverted. But having already briefly touch'd at such Indispositions of them as are most dreadful under the Names of *Aplexies, Epilepsies, Lethargies, Convulsions, Fits,* and such like; it only remains, that I hint at some others that belong to the same Tribe, but being more common and less dangerous, are not so much regarded.

II. And these are what, according to the modern Phrase, are called Vapours, which being derived from the same Source, *viz.* the Spirits, seem to differ only in this; that where the Symptoms are only slight and troublesome, they are termed Vapours; but when more frightful and surprising, Fits, or by some other Name. It is true, Fits sometimes are occasioned by something external to the Spirits, soliciting or irritating them into such sudden Disorders, as hath been already intimated; whereas Vapours seem only to consist in a certain State and Condition of them, and in nothing external to them. But that this uncertain and undetermined Word, which is used to express a diversity of Symptoms, may not be undistinguish'd from those Diseases that are taken to be comprehended under other Names; I shall only use it to signify any slight Disorder
of

of Spirits : For if surprizing and formidable Disorders appear, I think such are usually ranked under other Denominations. This perhaps may be looked upon as a very loose Description ; but a Word taken in so many and so uncertain Significations, will scarcely permit of a better. For by this Word, is not denoted any one or more determinate Symptoms, but a multitude ; for wheresoever there is discerned any slight and unusual Disorder in the Functions of the Spirits, it is immediately signified by that Expression. Thus if the Mind is clouded with any black or melancholly Ideas, or darkned with any despairing or dreaded Apprehensions, or if affected with any Succession of incoherent Thoughts ; if such things are but of short continuance, so that the Mind recovers its former State, by being able to discern and discover the Vanity of such ; although these sometimes repeat, yet they are called Vapours ; whereas had they continued, they would have acquired another Denomination. When any slight Disorder is perceived in Sensation or Organical Motion, whether in the Voluntary or Vital, or both, it is usually dignified with the Title of Vapours ; thus Risings to the Throat, Shortness of Breath, Palpitations of the Heart ; thus slight Convulsive Twitches, Catchings in the Muscles, and so forth, are often called so.

III. But in order to discover a Reason of this unhappy state of Spirits, it will be necessary to take a short view of the condition and manner of living, of such Persons as are most usually afflicted with them.

First, it is observable that Women are much oftener afflicted with these unhappy Symptoms than Men.

Secondly, That such Persons groan under these Complaints, that live sedentary and unactive Lives.

Thirdly, That it doth not appear to proceed from difference in Diet, but want of Motion ; because it may be found in Cottages as well as Palaces, amongst the Poor as well as Rich ; where Accidents or Necessity oblige such Persons to get their Bread, in Methods that are attended with no Toil or Labour.

IV. That most excellent Part of Man, that thinks and perceives, and hath a Power of moving several Parts of the Body, being confined to the narrow Precincts of the Brain, uses the Spirits as the Ministers to receive Intelligence from without, and to execute her Commands from within : But these her Instruments being prepared by the Brain out of the Blood, are not alway alike be-fitted to execute such Functions ; for the Blood being alter'd or depraved, these Spirits that are derived from it, become so likewise, and then
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being unfit to perform such Offices, the Mind suffers, and her Functions become perverted.

Besides, these Spirits being by Nature befitted for Action, will not continue unemploy'd; for if they are not busied by the Mind, they will employ themselves, (as every one may experience when awake.) For then we have a continued train of Thoughts, our Senses are open to the Operation of external Objects, and some parts of our Body are moving, whether our Minds consent to these or not. However, the communicating and giving motion is a proper Business to the Spirits; and if they are not employed in that which consists in their tendency outward, that is, from the Brain to the Muscles, they will by a neglect in that become more prone to return inward; that is, from the outward Parts to the Brain, which is their motion in Sensation; by which means their natural Order being broken, such a Legion of Symptoms as are intended by the Word Vapours, are formed: A Disease in some truly miserable, in which the Diseased really are, or at least think themselves always a dying.

V. It is farther to be observed, that although this unfortunate State is for the most part imperceptibly brought upon us, by our own, or by the Faults or Follies of others; by a Defect in not using our Bodies to Motions that would have been both
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for our Pleasure and Health; (for had our Spirits been so employed, they would not, by recoiling inward, so often mould themselves into such unhappy Thoughts) yet afterwards our very Bloods and Juices will by that neglect also become depraved: For the circulatory Motion of the Blood being made by the help of the Spirits, as hath been shew'd, if they are disordered, that will be so; whereby its Crasis and Mixture will become weak, by reason it is not forcibly enough impelled forward. Besides, by the Muscular Motion, the parts of the Blood are exagitated, moved, and of consequence the better mixed, by which the Crasis is preserved the more entire, because the Parts are hindred from dividing, such Motions always quickening and encreasing the Pulse by which the Blood is the more forcibly drove to the Surface, to produce Warmth and Colour there. Whereas in an unactive and sedentary Life, the Blood receiving no Accession to its Circulation by bodily Exercisings, how apt are the Parts to break and immaturely to divide? from whence divers Symptoms accompanying such a manner of Life, seem to be derived, as white Tumours, Fulness, Swellings, Obstructions, Hindrances in some, Separations and Enlargements in others, pale Faces, sickly Looks, want of Stomach, universal Languor;

guor, and a Legion of particular Infirmities. And the Spirits themselves in their very Natures grow depraved and altered, as being now derived from so corrupted a Source, they really are unfit and incapable to perform their natural Offices, by the Pretermission of which, perhaps originally, this Illiad of Misfortunes enter'd.

VI. From whence it will follow, that as these Symptoms, or this Disease, proceed in that the Blood hath not been sufficiently moved nor exagitated: So then the remedying of such, must consist in the doing of that which can be perform'd but by one or both of these ways:

First, Either in renewing, or frequent repeating bodily Motion, which is external to the Blood, perform'd by the Spirits actuating and moving the Muscles.

Or, Secondly, by something internal, which being received and admitted into the Blood it self, hath there a Power to give, as it were, a new Life and Motion to what appears so languid and sluggish. But the first of these is found for the most part impracticable, by reason a sedentary and easie Life, being by continuance become habitual and so pleasing, is not, without great difficulty and uneasiness, to be overcome; and Persons labouring under these Circumstances, too often deter themselves from such Attempts, by thinking they are unable to perform

form them: Wherefore recourse is for the most part had to internal Medicaments, hoping to find that Relief from them, which their own Doubts or Fears will not permit them to take from bodily Exercise; or at least now by so long a continuance are not to be recovered that way. Amongst the most celebrated Remedies commonly used in this Case, Steel hath not undeservedly gained the first place, as being usually the principal Ingredient, although in very differing Forms and Preparations, in most of these Prescriptions.

VII. Steel then and its *Preparations* being to be comprised under that sort of Medicines term'd *Alteratives*; it may not perhaps be an useless pains to enquire what Steel really performs in our Bodies; but to discover this, it will behove us to keep close to the formerly mention'd Rule, in heedfully distinguishing between the certain and regular Operations, and the but accidental or contingent Effects. But to do this the more distinctly, we ought to consider, that all *Alterative Medicines* must either exert their Powers or Virtues immediately upon the Spirits, as I have already prov'd: Or else upon the Blood, into which they must be admitted. And Steel not being a fugitive Body, emitting any strong Emanations, is not observ'd directly to affect the Spirits, as some strong *Volatil* or *Fætid* Things do. But
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it may be always observ'd when taken inwardly (if it but lodges in the Body) that is, doth not some way work off; that it will powerfully affect the Blood, into which after it hath been receiv'd in sufficient quantity, it never fails to exagitate, as may be collected by the Heat it creates the natural Effects of that; so likewise in that it quickens and invigorates the Pulse, the circulatory Motion being intended; and these its Effects appear farther evident by the frequent Eruptions it makes upon the Skin, by the Turgency of it in its proper Vessels, by that Warmth and Colour it gives to the Face and Surface, and by the hindring Separations that appear to be the effects of its slow Motion; and in short, by its assisting and encreasing whatsoever proceeds from a brisk agitation of its parts: By this means it promotes Bleeding, whether in a natural way as by the Menstrua, or in an unnatural one, by any other Passage, and likewise gives a colour and consistency to the Blood, as may be observ'd by comparing of it, before and after its use. Hence Steel is a true and real Specifick in those Diseases that arise from such a weak and debilitated state of Blood, because the Blood only is in fault; wherefore that being better'd, all Symptoms depending upon that, cease. But if the Crasis of the Blood is spoil'd from any Cause external to it, as by any formed Tumours,

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or any extraneous or disagreeable Matter continually admitted into it ; Steel will then be found but a trifling and ineffectual Remedy, unless that Cause can be first removed. But whatsoever Symptoms appear, that are derived from the Blood that is become low, degenerated, and sluggish, from its own Nature, although the native Beauty is changed, Colour lost, Stomach depraved, Separations encreased, as in Urine and Spit-
tle, Spirits weak, Strength decayed, Flesh consumed or wasted, and an universal Languor over the whole Body, yet these and many others, proceeding from the same Cause, will most undoubtedly be remedied by Steel, if it be duly and judiciously administred. But notwithstanding so many Advantages are procur'd by this noble Mineral, yet it is not exempt from Calumny ; for Men seem not satisfied to have their present Infirmities remov'd, but are apt to condemn it of Inefficacy, because it will not prevent the Mischiefs that their Ease or Vanities will introduce ; and therefore frequently reproach it, as if it only procured a short and vanishing Health that continued no longer than the Medicines was taking : Whereas the Medicine, in restoring the Blood, and removing the Symptoms, hath performed all that can be expected from it : And if the Blood does again degenerate into the same unhappy Condition, that may be a Crime of the
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Diseased, in not preserving Health when once acquir'd, but no fault or defect in the Medicine; since that in restoring Health, hath performed all that was to be expected from it: Because being only a natural substance, it can only operate upon what is present, and therefore cannot effect what is not.

For if every Part of a Humane Body, hath a separate and distinct Office and Use, and every one conspires and co-operates for the Good and Health of the whole: It is plain, by any interruption in the use of one, the whole must be disordered. The *Blood* that hath a principal share in the Health of the whole, will not perform its regular Office in running brisk enough thorough the several parts of the *Body*, unless assisted in its Progression, by the Motion of the Muscles; neither can it perform this Office, if its Passage through its proper Conduits be hindred; and if the *Blood* therefore doth not do this, the *Body* must be diseased. It cannot then be wonder'd at, that such Persons that will not, or do not undergo the first, and are yet enjoined to suffer under the last, are so usually diseased.

For if the usage and manner of *Europe*, hath introduced a sedentary and unactive Education for the tender Years of the Female Youth; and if their young and yielding Bodies are to be squeez'd and cramp'd

with *Stays*, pale Faces, sickly Looks, unhealthy Constitutions, and misshapen *Bodies*, must be expected, as being but the natural Effects of such Customs.

For how should the *Blood* preserve its *Crafs*, or perform its natural Offices, when what Nature requires for the doing of that, is in part wanting? How should every Region of the *Body* receive its just and natural proportion, when by the compression of its Vessels, the Passage in several Parts is straightened or hinder'd? Or how can the Parts themselves perform their Offices, when they are so bound down, that they want Power to do it? How can it be otherwise, than that *Bodies* must be often deformed, when Nature is not permitted to work in her own way, when the *Blood* is diverted in its regular Course, and forced to run unequally? How can it be otherwise, but that when the *Blood* runs disproportionably, but the Parts must nourish so? And if the Parts nourish so, what can ensue but Deformity? for if some Parts grow whilst others starve, natural proportion must be destroyed.

Thus here in *Europe*, hath Custom introduced an over-tender Cruelty, by punishing the *Bodies* of Infants by Swaths and Bandage, under a trifling Notion of supplying Weaknesses that are inseparable from our Natures. Thus likewise do we destroy the Healths and Shape of growing Youth (for
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by thinking our selves wiser than the God that made us) we pretend to give Shapes, when in truth by such preposterous Measures we destroy them. For amongst those Nations that we esteem barbarous, where Nature is left to act her own part, in the shaping and fashioning humane Bodies; where the Members of the Infant are left at ease and liberty; and where the Bodies of the Youth are left at large to grow and spread; there are seen no hunch Backs, no full Shoulders, no deform'd or crooked *Shapes*; but their Bodies, as well as their Limbs, bear the *Shape* Nature designs them.

Whereas in *Europe*, *O tempora! O mores!* how many miserable Objects of our own Follies and Vanities, do we daily see?

I do not deny, but bodily Indispositions, are sometimes the immediate occasions of such wretched Deformities; but then I think such Deformities, (nay perhaps such Indispositions,) had never ensu'd, had not the Blood been compell'd to run in equally: Because, notwithstanding the Blood in such Illness was vitiated, and so rendred unfit for regular Nourishment; yet that could not have been unequal, unless the Blood was unequally dispersed; for otherwise not one part, but all would suffer. These Considerations of the Nature of our Bodies, and the Custom and Manner of using them, do give us clear Ideas, why notwithstanding our

Blood is restor'd by the use of Steel, it is so apt to degenerate into the same unhealthful State.

And as Vapours do often proceed from such a state of Blood, that is usually better'd or restor'd by the use of Steel: Steel hath gradually acquir'd such a Reputation in that Disease, as to be esteem'd a kind of Specific in it: And from this reason, where such Symptoms appear as are term'd Vapours, Steel is the *Asylum* to which most recur.

But because Vapours are only slight Disorders of the Spirits; and the Spirits may, and do often fall into such, when the Temper of the Blood is not to be mended by Steel; therefore it often happens, that Steel in Vapours is found but an ineffectual Remedy.

But Physicians having entertain'd Opinions of certain and determinate kinds of Diseases, and agreeable to that, of certain Medicines that were only proper, or indeed *Specifics* in such kinds, have always esteem'd such Medicines useful in such Diseases: And since the Reputation of *Chymistry* hath flourish'd, have usually endeavour'd to separate and divide such specific Substances, that so they might obtain such parts only, that would be always useful.

From these reasons Steel hath been tortur'd by Preparations, that so being stripp'd of all its useless and nocent Qualities, it might be

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advantageously given to all Persons, who were afflicted with such Symptoms.

But notwithstanding Steel doth undergo a variety of Changes by the many differing Preparations; and notwithstanding some of these Preparations are excellent Medicines, yet the Nature, Power or Efficacy of that Mineral unprepar'd, are not encreas'd in any one of them. For altho' some of the *Chalibeat Preparations* retain somewhat of the native Virtues of that *Metal*, yet they are rather weaken'd and impair'd, than invigorated and strengthen'd; neither does there any advantage shine forth in such Preparations that possess the Virtues of the unprepared Steel; but that they may be exhibited in a more elegant Form, and may be render'd somewhat more grateful to the Stomach. And what is very remarkable, where the tender Constitutions of some Persons will not bear the unprepar'd Steel, and yet Steel is useful; the *Chalibeate-Water*, as they are to most such Persons more grateful, so they are usually more powerful than any pompous Preparations of that Mineral.

But if the Custom and Manner of the Age, will incline Men to continue in a method of living, that must be destructive to their Healths; neither *Steel*, *Mineral-Waters*, nor any Preparation of *Steel*, nor any other Medicine, can prevent these Evils that

Men wilfully pull down upon their own Heads.

For if the farthest parts of the *East* are to be search'd for Spices; and the remotest Regions of the *West* for unusual Dainties, and all other Countries for new Liquors; if Men will more study to tickle their Palates with pungent Sauces, than with wholesome Food to gratifie their Hungers; if Men will more delight to warm their Heads with strong Liquors, than to restrain their Thirst with innocent Ones; if Men will in all things prefer a voluptuous Luxury to a temperate Sobriety; and if to all these, they will indulge an unactive and sedentary Life; rarely employing their Limbs in such Uses, as they are befitted to undergo, and were ordain'd for: It is not to be wonder'd at, if they are punish'd with Vapours, Pains and Infirmities, when thus all they do contribute towards such Things. In vain then do we complain of the inefficacy of Medicine, when we thus suck in our Diseases with our Drinks, and swallow our Infirmities with our Food.

Besides, by these our Luxuries, the very Efficacies of Medicines are destroy'd: What can be a Cordial to him, whose daily Liquor is a continu'd Cordial? What can warm or invigorate his Blood, that is daily heated by what he eats and drinks? What can help a
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Stomach that is every day gorg'd with what should cherish it? What can give a Man *Spirits*, that every Day wantons in the use of such things as should do it?

Physicians no doubt have long since perceived these to be the Sources from whence a multitude of the Diseases that afflict Mankind arise, in that they have so often enjoyned Regulations in Diet; but in these Rules they seem to have regarded more the Favour of the Patient, than the removing or preventing of the Disease; *Salt and sharp things* lie under the general lash of Reproach, how deservedly (in exclusion to other qualities) I shall not now examine: *Small-Beer* likewise lately hath fallen under the Displeasure of most *Physicians*, and *Wine* and *Water* are to be substituted in the place of that innocent Liquor, whilst things of Luxury and Excess, that really debauch the Stomach and deprave the Blood, receive a much kinder Usage.

Small-Beer, the native Liquor of our Isle, and the usual Drink of our healthful Ancestors, is now condemn'd, (by those that are no Friends to it) as the principal Author in the producing humane Miseries in *Chronic Diseases*: And yet what seems wonderful in this hard Sentence upon *Small-Beer* or *Malt-Liquors*, is, that those Persons that drink most plentifully of these Liquors, are least afflicted with those Diseases, for which they are
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condemn'd as the Cause; this same is to condemn the Innocent, and reward the Guilty; for certainly such Evils may with greater reason be ascrib'd to other Causes, than to that of malted Beer.

But ancient Liquors, like ancient *English* Fashions, are now to be disus'd, and to be Patron for either, is as ridiculous as the things themselves; notwithstanding our Healths are neither better'd, nor our Lives lengthen'd by the first; nor any conveniences added to our Bodies by the last, yet both must alter, because all things are changing.

S E C T. III.

C H A P. I.

IN the first *Section* of this Discourse, it is prov'd that there is a multiplicity of Fluids in a humane Body; and that altho' *Diseases* are usually specificated, either from the part affected, from the manner affecting, or from the principal Symptom; yet really such (so far as they can be a *Physician's* Care) are only the Effect of some Vice or Alteration in the Fluids: And that altho' Men, according to the *Philosophy* of the *Schools*, have reduc'd *Diseases* into certain Kinds, and have treated them as partaking of one common Nature; yet the Kinds being to be known by the Symptoms, and the same Symptoms not always co-existing; therefore the Species or Kind hath been sometimes disputed, because the *Diagnostic* are not entirely agreed: And that *Diseases* being distinguish'd by their Symptoms; and some Symptoms being esteem'd proper to some *Diseases*; therefore when such different *Symptoms* are found to

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co-exist in the same Person, the Case is call'd a *Complication*, that is, the Person is then said to labour under more *Diseases* than one; or when some *Symptoms* co-exist that have not been made essential to any one kind of *Disease*; and so a proper Name or Names are wanting to express them: These, when once honour'd with a Name, are afterwards treated as a new and entire *Disease*.

It is from these reasons that *Complications* and new *Diseases* so often appear in this our World: By the first of which, Men are often perplex'd in so adjusting their Methods and Medicines, that they may equally respect the several *Diseases* the Patient labours under: By the second their Heads are puzzled to invent means to dispossess an unknown Enemy: For *Diseases*, according to that Doctrine, having a common Nature, are to be treated by certain settled Methods; therefore when two *Diseases* were associated in the same Person that were wont to be cur'd by opposite Methods, the Case was esteem'd deplorable, by reason what was thought proper for one, was esteem'd destructive to the other.

II. This Doctrine of certain Species of *Diseases* hath been so universally receiv'd, that notwithstanding Men have divided about Principles, about *Hypotheses*, to explain their Natures; about *Diagnostics*, by which they are known, and about Methods by which they are

are cured, yet still they have agreed that there are such. And yet, notwithstanding this general consent of Men, it is plain in Fact, (as hath been proved) that Diseases are only depravities or alterations in our Juices; which keep in no certain bounds, nor appear by no regular Symptoms, and therefore cannot be reduced into any certain Classes; and all our Juices are but as Rivulets from the same common Fountain, the Blood; and therefore altho' they appear in different Parts, and in different Forms; yet when they are altered or vitiated, they are only to be bettered and mended by the Blood: And for this reason, all methods invented and recommended for the curing this or that *Species* of Disease, ought to be scorned and despised. And the faults or alterations of the Juices, as such, are discovered by their several appearances, to be only regarded in the use of Medicine; and therefore, notwithstanding the *Symptoms* appear in very differing Shapes, (which were formerly taken for divers Diseases) yet if such proceed from the same alterations in the Fluids, they are to be remov'd by the same *Therapoe*. For it can be of no moment in what region of the Body a Disease appears, when it is derived from the Blood; since the Blood is incessantly thrown about to every Part of the whole Body in circulation, and flows every where in proportion to the amplitude of its Vessels.

Vessels ; and so can be in no ways capable to convey Medicine more to one part than another.

III. But notwithstanding all particular Juices are only separations from the Blood, and the *Secretory Vessels* are only passive in that performance, so that they cannot be depraved or altered, but as the Blood is some-ways corrupted or changed (excepting where the Organical Parts are any ways injured by external Violence or Force) for if they are internally altered, it must be by the Fluids. Yet by reason the Depravation or Alteration of these Juices becomes in slow and chronick Diseases first visible to us, and such are denominated from them ; I shall consider them under a third Head, as distinct from those of the *Blood* and *Spirits*, and so appertaining to the appropriate Juices.

IV. But that we may the clearer comprehend these Diseases, it will be necessary briefly to repeat what hath been already proved, *viz.* That the Blood is a Fluid, compounded of very different and unlike Parts, and that it continually moving, and daily wasting, by the means of the Secretory Vessels, which are so constituted and fashioned, as to filtrate and let pass such Juices as are befitted to insinuate and run thorough them ; so those Vessels being passive in the Separation ; that therefore the internal Cause of the differing alterations in these Juices, is from the nature
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or disposition of the Blood, from whence they are derived ; and that when that is altered, these must be so : But we can learn nothing immediately of any internal alteration of the Blood ; by reason that it is so included in its own, and other Vessels and Parts, as entirely to exclude us from any knowledge of it, but as we collect or conclude by its Motions or Separations ; for it is they only that fall under our cognizance : So that they being observed to be altered, we infer, that the Blood from whence they are separated, and upon which they depend, must be so ; but what that alteration is, or how directly effected, we can never learn, as not having faculties for such a discovery ; in this only we are certain, that it is changed because these are : And if this change is sudden or violent, it is usually attended with such Symptoms as are collectively expressed by the Word Fever ; but if slow, gentle and languid, it is then commonly denoted by some indefinite Word, as Scurvy, ill habit of Body, foulness of Blood, or, if you please, a *Cachexia* ; so that as that state of Blood that is generally called a Fever, is to all acute, sudden or violent Diseases ; so is Scurvy, ill habit, or foulness of the Blood, to chronick or slow Diseases : With this difference, that acute Diseases, by reason of the suddenness or violence in seizure, are commonly immediately observed, and denominated : Where-

as Chronicks being gentle and flow in their beginnings, are not at first much regarded ; until gradually encreasing they have formed some one or more formidable Symptoms, and then they are made a Disease, being honoured with a particular Name ; when in reality this now named Disease is nothing but some separation from an altered or vitiated Blood, made by the means of some Secretory Vessel, or else somewhat cast out or expelled the Blood, upon some consistent Part, that is not by Nature adapted to receive such Separations. But notwithstanding these Separations proceed from the Blood, yet it is evident, the Vessel or Part gives to them their Form ; that is, the Qualities or Powers from whence they are denominated, and by which they become such a particular thing to us ; which appears in that such Separations are cloathed with such Qualities as are not to be found in the Blood ; and furthermore, by reason if such are again but received into the Blood, they corrupt, disorder or alter it. So that although such Separations are often changed as the Blood alters ; yet, that seems to proceed in that the Configuration of the Vessels or Parts may be someways injured or forced by reason the Fluid that now pervades them to pass, is altered, which seems the more probable by reason such being consistent, and having no Motion proper to them, cannot of themselves
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alter their Figure or Texture; if therefore by these Effects they seem to be so, it must be made by some other Body: And by this means we may sometimes observe they acquire such an internal Configuration as never afterwards to separate naturally, which appears in that the Juices afterwards there separated, are very different and unnatural, as I shall farther prove.

V. Every days Experience will abundantly confirm this Truth, that it is not in Nature necessary, that every Substance that is drawn, separated, extracted or divided from another, should be formally pre-existent in it, but that it is materially, carries its own Evidence: For instance: I suppose no Man will be so vain as to affirm, that the Feathers, Skin, Bill, Bones, Flesh, Heart, Liver, Blood, and all other Parts of a Chick, were actually and formally pre-existent in that uniform Liquor, the White of an Egg; or, if you please, that and Yolk, out of which it is most certain they must be formed: Neither will any one be so hardy to aver, that the glorions Colours of a Tulip, the fragrant Odours of Jesemin, the delicious taste of a Pine-Apple, were formally pre-existent in a little contemptible Earth and Water; yet it is plain, Nature out of these does daily produce them: I need not instance farther, there being such a numberless number of such Productions that may fall under every one's Observations: Neither

need I enlarge by shewing farther, how a little humane Skill can again multiply another number of Properties or Qualities out of these, that were not to be observed in them. It is true in all these things there is required an Aptitude, Capacity or Disposition in the Materials ; for a Chicken will not be formed out of every Egg, nor all Earths and Waters will not equally produce such Rarities ; yet still they were not formally pre-existent in them, which is all I intend to prove. But although these instances must be allowed as most true, yet perhaps it may be objected, what is all this to what passes in our own Bodies ; for notwithstanding it is thus with other Beings, it will not from thence follow it must be so in our selves. To obviate this Objection, I shall not insist how our Blood, Juices, and our consistent Parts, that are nourished and increased by what we eat and drink, are extremely unlike such things ; but shall by a visible and common Instance, shew that the *Part* directly gives the Form, although the Blood supplies the Matter. In an Inflammation we may sensibly observe in the very *Part*, that it gradually acquires new Qualities, it being at first red, and if wounded, then it distils Blood, which by lodging in the *Part*, insensibly suppurates, and becomes what we call Corruption, Pus, Matter or Quitter ; by which it is plain, it there assumes

fumes new Qualities that justly entitle it to new Denominations. And this is likewise most apparent in most Tumours, Sores, or Ulcers. And Tumours, from whence most usually the others proceed, being either form'd from Blood it self, as Inflammation, or from preternatural Separations of the Blood, as other Tumours, and so are often treated by internal Methods; therefore, as the former have been consider'd as acute, so these latter may as Chronick Diseases, or at least as Occasions of creating such; wherefore it may not here be alien briefly to consider them.

VI. Tumours, or preternatural Swellings, being form'd by some unusual Separations left, lodg'd, or collected upon a particular Part, which, altho' different in form, yet being all deriv'd from the same Blood, I shall consider them as they are profitable or hurtful to the Diseased.

First, Some Tumours are profitable, in that the Blood purges it self that way; for having thrown off the peccant Parts in such Tumours, it recovers its natural Temper; so that these are Critical.

Secondly, There are others, that although they are the Effects of some Separations, yet the Blood is not bettered or mended by them, so that there is no sensible Advantage. by such, therefore are only symptomatical.

Thirdly, There are others, that although produced by some internal Cause, yet arising from such small and unperceived Beginnings, they are not observ'd until form'd, so that they do not discover how they spring; as whether the Blood freed it self of any disagreeable Parts, by first lodging them there; or whether from any Irregularities in Nourishment, or some small depravity in the Blood, or from what other unknown Cause.

Fourthly, There are others that are produced by some external Violence; but these being perfectly Chyrurgical, no ways relate to my Design.

The Tumours of the Third sort, are now only to be treated: In the doing of this, I shall not waste time in a fruitless Enquiry concerning their Origin; it being sufficient for my present purpose to observe, That whensoever they are endowed with their proper Vessels, and receive their proportion of Blood, and so communicate with the rest of the Body, (and seem to differ in nothing but that they are of a latter birth) they are really a Part of the Body.

For these unnatural Parts once formed, and supplied with Blood by their own Vessels, either only nourish, and so encrease, but in proportion to the rest of the Body; or else unequally, and then they grow into large and unequal Substances, and are denominated according to their differing appearances;

pearances ; if hard without Pain, and carry the Colour of other Parts, they are call'd *Sarcoma's*, *Steatoma's*, or *Stirrhus*; if without Pain, and differing in appearances, *Cancers*.

But if such unnatural Parts are of so loose Tentures, that they receive Juices in their Substances, which for want of Vessels, or Passages, remain in them; then such Substances are usually denominated from that included Matter, and from this Reason some are term'd *Meliceris*, others *Atheroma's*, &c. However, when such Juices are contain'd in the Body of them, they will gradually encrease.

But if these preternatural Parts have either Duties annexed, or are so seated, that the Juices made by them find Passages out of the Body, they no more encrease in bulk than other parts of the Body; and this frequently happens in the Breasts of Women, in which such Juices find passage by the Nipple; and then although call'd Cancer, yet may remain with much prejudice, unless that Issue by the Nipple be stop'd.

But with whatsoever Names or Titles these Tumours are dignified with, or distinguished by, is not material to my Purpose, nor to their Cure; for being fixed in determinate Seats, defended and wrapped up in their proper Coats, endowed with their own Vessels, united and adjoin'd to other Parts, nourished and supplied with the same Blood, and in the same Methods, can there-

fore no more be punished, resolved or destroyed by internal Medicines, than any other part of the whole Body.

And as these preternatural Tumors or Vessels, can be no more resolved or destroyed than any other parts of our Bodies; so neither can the Juice they prepare be by any other ways lessen'd or alter'd, than those made by other Secretory Vessels. For the Qualities or Forms of such Juices, whether call'd *Cancerous*, *Scrophulous*, &c. being imparted by the Tumor or Vessel, (as the Bile is by the Liver, the Urine by the Kidneys, &c.) and so not formally pre-existent in the Blood, is no more to be altered or mended than those. And as the Bile or other Juice (altho' separated from the Blood) if they return by unnatural Methods into the Blood, do immediately vitiate and spoil it; so these Juices not being congenite to our Blood, if they mix with it, taint and corrupt it. And as the Blood is never to be mended, when corrupted by a preposterous mixture of the Bile, unless that Juice can be brought to flow in its right Channel; so neither is it ever to be better'd, when poison'd by those unnatural Juices, unless such Juices can be diverted from mixing with it. Neither are these preternatural Vessels to be hindred from making their Juices, (unless extirpated) by reason such Juices being prepared out of the Blood, by these Vessels; and the Blood being in its Cir-

culatation equally distributed to all Parts, in proportion to the Capacity of their Vessels, must necessarily supply these.

These Considerations shew the Vanity, and experience the Inefficacy of that tribe of Medicines that are frequently used in these Cases, as things that correct strumous or cancerous Humours, or as Sweetners, as they are term'd in such Cases of the Blood, as Pearl, Coral, some preparations of Antimony, decoctions of Sarsa, China, and such like. For if the Juices, or, if you please, Humours, are made by the now form'd Tumour, Part or Vessel, as I think it is evident they are; then are they not to be alter'd, unless that which makes them can be destroy'd, which can never be done that way. But here I would not be misunderstood, as if I exploded the use of these things in all such Cases; which I do not, but only shew their insufficiency for contributing any thing directly towards the removing the Tumour, or altering its ordinary Separation; but if such Tumors or Vessels are accompanied with such a state of Blood as indicate or requires the use of such Medicines, I think they or any other proper Remedy ought to be administred. For altho' no internal Medicine can, by altering the Blood, change the ordinary state of the Juices that are separated by these Vessels or Tumors; yet if they are become worser by some depravity of Blood, they may, by

mending the Blood, be again reduced to their former state: And not only so, but their encrease may be somewhat hindred by lessening that Matter by which they are supplied. For it is clear that these Tumors being supplied and fed by the Blood, as all the Secretory Vessels are, will partake of its alterations as they do: So that as whatsoever retards the Motions or unloosens the Mixture of the Blood do usually enlarge other Separations, they will likewise perform the same by these; and on the contrary whatsoever lessens them, usually diminishes these, as we may frequently see in Fevers. From these things thus premised, we may readily discern the reason why Mercurial Remedies, that so powerfully resolve Tumors that are luxuriantly form'd, but not contain'd in a proper Cystis, nor endow'd with particular Vessels, whereby they are fed, are so unsuccessfully given in these: And why the most powerful, and most lasting Evacuation, even Salivation, has no other effect than to waste these proportionably with other Parts: And why in the worst of these that we term Cancerous, they are so very hurtful: And likewise, why outward Applications, and especially such as are thought to discuss or suppurate, are so very dangerous. For by the first of these the Blood will be the more tainted, the noxious Juices being by such Applications drove from the part; and by the last, these unnatural Vessels are the
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more irritated and enraged, as being by such disposed to be more susceptible of Juices,

VIII. Such then being the state of these Tumors, it is evident they are never to be destroy'd but by an Extirpation, which by reason of their situations cannot always be securely done; neither if the Blood is already depraved or corrupted by the Poyson of these Juices, is it to any purpose to do it, for to extirpate such is only to create new Mischiefs. And what remains to be done, seems to me principally to consist in a plain, simple and regular way of living (always excepting where such are attended with other Indispositions.) For unless where Fashion, Usage or Custom, hath introduced a manner of living that will necessarily encrease Separations, I see no reason to have recourse to Medicine. For I conceive that all the consistent Parts are nourish'd by the Blood; and that these, and all the natural secretory Vessels, separate their Juices from thence; and that the more is wasted and discharged, the more then is requir'd for their supply: That what we call Hunger and Thirst, that is the desire of Eating and Drinking, naturally proceeds in that such a quantity of Juices are wasted or spent, that the solid Parts cannot receive a due proportion; hence the tender and sensible Fibres situated in and about the Stomach, *Fauces* and Mouth, that are befitted and placed by the great Author of Nature to give the
Mind

Mind notice of this Bodily want, begin for want of such Juices to corrugate and be uneasy; by which the Mind is alarm'd by a perception of that, which is what we term *Hunger and Thirst*, and thereby a desire is created of Eating or Drinking, whereby to quiet this, by supplying what is wanting. For the Blood being contain'd in its proper Vessels, and always moving in them, seems as if it were naturally to be commensurate to them; so that as the consumptions are, the supplies should be. And this Nature plainly dictates, in that such Persons who by virtue of Labour, Toil or Bodily Exercise, make the greatest consumptions, usually acquire an Appetite answerable to such. And on the contrary, they that waste little usually eat little. It is true this admits of great Exceptions, some Persons eating plentifully that waste little by Toil; but then it is when it runs off again by some other ways, as usually in Loosenesses, Sweats, or so forth. They therefore that indulge themselves to ingest plentifully, and do not sufficiently waste what is superfluous by Bodily Exercises; the Blood being encreas'd, and the Vessels loaded, the Secretory Vessels not being able to waste it fast enough, either from its quantity, or its inaptitude to pass by them, it can be no wonder if these unnatural Separations do from that reason encrease. However, these will receive their proportion, and the
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more the Blood abounds, the more these must be replenish'd; or the more that is depraved, the more these must alter.

And such now is the usage of *Europe*, that it is difficult so exactly to adjust a manner of Living, but that superfluous or hurtful Juices will be congested, wherefore repeated Evacuations are sometimes in such Cases entirely necessary: Not that such exterminate the hurtful Juices prepared by such Vessels, but that they lessen the Matter out of which they are prepared.

C H A P. III.

IF we but impartially examine the state of Blood, from whence Chronick Diseases that consist in preternatural Separations, seem usually to be deriv'd, we may in the general observe it to be slow in its progressive Motion, and loose in its Mixture. The first of these appears manifestly by the Pulse, which if tolerably strong is always slow; or if quick, it is languid and weak. And the Blood being continu'd in its Circulation, by the Vibration of the Heart and Vessels, its Motion must be as they are: But there are two things to be consider'd, in order to regulate

gulate our Judgment about this Motion, and these are the Force and Strength of the Vibrations, and the space and time between them: For Instance, should we admit that the Heart in a strong Systole, should throw out two Ounces of Blood, and in a weak one, but two Drams, and yet the space of time between these Two to be equal; it is plain, the difference in the Circulation, by reason of these so different *impetus*, would be as Eight to One; that is, equal proportion to the *Impetus*: But if Two of the weak Systoles should be performed in the same time as but One of the strong, it would be but as Four to One; for this Motion of the Blood depending upon these, must bear proportion as these do. The second is, that the Crasis or Mixture of the Blood is generally loose; and this seems to be a concomitant Effect to the former; For whenever the Blood moves forward but slowly, that is, is impelled but faintly, its Mixture becomes loose, its Parts being apt to break, divide, disunite, or coagulate running into Parts, very differently, according to the Capacity or Aptitude of the Vessels, or Hindrances it meets with, or some other unknown Cause; for which Reason, in most of these Diseases, it plentifully wastes by depraved Separations; for altho' perhaps some one may be lessened or perhaps hindered, yet collectively taken, they are usually encreased. Unless in Dropsies,

Dropsies, and in such Cases where its mixture is so marvellous loose, that thinner Parts discending from the other, insinuate and get out of the common Paths and Passages, and are not circulated with the rest of the Blood, but do continually subside and fall downard; hence so great a quantity parting from it by this means, some of the *Secretory Vessels* must be deprived of it, by reason of this mighty derivation: And in such Cases, it is no wonder if they are lessened, notwithstanding the disposition of the *Blood* to part; because such Parts thus getting out of the Road, cannot be drove about by the Circulation, nor of consequence be brought up to the *Secretory Vessels* to be there fecerned, as they would have been had there not been this marvellous Discession.

II. It may be farther observed in some Chronick Diseases, that some one or more of the natural *Separations* may be lessened or suppressed, and yet not proceed from the Cause already assign'd, but from Obstruction or Hindrance, either in the *Secretory Vessel* it self, or in the *Ductus* or Passages from it. Yet, notwithstanding any such default in any particular *Separation*, there always does, so far as ever I could observe, in all Chronick Diseases, appear a marvellous Readiness and Disposition to separate, although sometimes in very unusual and unnatural ways.

III. But the better to confirm the Truth of these Things, thus only in the general here premised, I shall endeavour to illustrate them, by briefly treating of Four; that as they are esteemed the most formidable, so I think they are the most common of Chronick Diseases, *viz.* the Jaundice, Gout, Dropsie, and Consumption: Perhaps it may be objected, that the Second properly consisting in Fits, ought not to have been in that number; but since the Habit or Disposition is looked upon as the Disease, and I not being so solicitous about Words, shall not depart from that Form of Expression.

IV. The Term *Jaundice* is vulgarly used to denote a Yellowness in the Eyes and Temples, and upon the whole Surface of the Body; but in a more especial manner, when that is accompanied with Urine of the same Colour, and whitish or clayish Stools, with a kind of itching about the Body, and a sort of Fulness or Uneasiness about the Hypochondria; and if these continue, loss of Appetite and loss of Strength. And because there is no Juice but the Bile that bears this Colour, and in that, the Dissection of Bodies tainted with these Symptoms, do plainly shew that the Bile that is separated is the Liver, is someways affected, *viz.* either hinder'd in its descent in its own proper Vessels, or someways injured in the Separation in the Liver; therefore we conclude, that

that the above-recited Symptoms, or this Disease, proceeds from some Affection, or Hindrance in this Juice.

To form then a just Idea of this Disease, it will be necessary to consider those Organs where this Juice is prepared, and those Ducta's by which it passes. 'Tis certain, the Liver is but a heap of small Glands, which are so elegantly fashion'd, that they separate only such Parts of the Blood as are besitted to be converted into this Juice, which being once separated, does naturally descend by its proper *Ductus* into the Intestines. And when this Bile is hinder'd in this its descent, and so reverts, or at least passes into the Blood by some unusual and unnatural Methods, it then produces those above recited Symptoms, what we expressing by one Word, do thereby constitute that Disease we call the *Faundice*.

The Bile being separated from the circulating Blood in the Liver, does spontaneously flow, by its proper Passages, into the Bowels, and this Course it naturally pursues, and always from the Form of the Vessels must continue, until it is hinder'd or diverted by some opposition, which can be form'd but from two Reasons, *viz.* Either by some Substance congested or made in the Cavities of the *Ductus*, or by some Fault of the *Ductus* it self; in that it is so straightned, or the
Parts

Parts so united, that nothing can pass in its Conduit.

If the descent of the Bile, and so of consequence the *Jaundice*, is occasion'd by any Substance form'd in the hollow of the *Ductus*, it is evident, that must be remov'd before the Disease can be cured.

Or if it proceed from the Coalition of the *Ductus*, that must be open'd, or the Bile cannot flow.

It is evident, a solid Substance fixed in a certain place, will always there remain, unless removed by some force; and a Substance form'd in that Passage, can receive no force for its displacing, but by one of these two ways, *viz.* Either by the means of the contiguous Parts, or by the weight of the descending Bile; because neither the Liver, nor these Vessels that are appendant to it, have any proper Motion of their own, whereby to do it.

The contiguous Organs that are capable of being moved by Medicines, (and can contribute to this) are only the Ventricle and Intestines. For the Stomach being stimulated into Contractions, (by which Vomiting is effected) does powerfully affect these Vessels, as evidently appears by the Colour and Taste of what is thrown up by that Operation. And altho' there is not so full an evidence in Purging, by reason there is
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no proof by Taste, yet the Colour of what passes by Stools, yield a Testimony of it.

The Reasons of procuring Passage, for the obstructed Bile, by the help of these Organs, are very obvious; but the manner of effecting it, by the means of the Bile it self, is somewhat difficult; because our Senses can give us but little assistance in the investigating this; our Reasons therefore must direct where our Senses fail.

It is certain, the Bile is separated from the Blood; and it is as certain, that nothing can arrive at the Liver, but what is brought by the Blood, (Nature having prepared no other Passages for this purpose); and it is as certain that the Blood visits the innermost Recesses of the Liver; and therefore it is possible the Bile may be affected this way.

And because it hath been a received Opinion, that the *Jaundice* is to be cur'd by Medicines that do not in their Operations visibly affect either Stomach or Bowels; therefore I shall now enquire by what manner of ways they can affect it. It is manifest, from what hath been already offer'd, that if such Medicines have any Efficacy to move the obstructed Bile, it must either be by encreasing the quantity, that so by the weight such Obstructions may be bore down, or by the quality, that so such may be dissolved.

The First of these is in no ways probable, because the Bile regurgitates upon its be-
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ing obstructed, and therefore cannot be pressed.

The Second is more unlikely, because such resolving Dregs being first receiv'd into the *Blood*, and passing with that through all the tender Parts of the Body, must have lost such Powers before it can be convey'd to such a Substance.

By what hath been thus said of the Bile and its Descent, and of the manner and ways by which the Obstructions that hinder its Descent, are capable of being removed, it appears manifest, as the curing this Disease consists in the removing the Obstruction, so the difficulty in effecting this, must be from the nature of the Obstruction; and therefore when this Passage is fill'd up with such a Substance as will not dissolve, and which is too large to pass away, or when it is grown up, this Disease must be incurable.

V. But because the Symptoms that are thus combin'd under one Word, and so according to the usage of former Ages, are treated as a certain and determinate Disease, and have according to that Opinion, certain Medicines appropriated for its Cure, which therefore are call'd *Anteickericks*: I shall, before I dismiss this Subject, say somewhat of their Natures, their Means of Operation, and what seems to have been the Motive for their Use.

The Medicines that have been vulgarly used in this Disease, may be considered as they were in the general esteemed Openers, and so were promiscuously used in all Diseases that were thought to proceed from Obstructions; or else they were such as were thought in some peculiar manner to be proper in this; and most of these are such as bear some Analogy or Likeness in some one or more of their Qualities to this particular Juice, as may be observed by *Saffron*, *Turmeric*, *Berberry-Bark*, *Selandine-Roots*, and all that Tribe that stain with a yellow Colour: As likewise of *Horehound*, *Centuary*, *Gentian* Roots, and such things of a bitter Taste. Whether these are endowed with any real and particular Virtue, to help or alter this Separation, I dare not determine; this only I can aver by my own Experience, (and I have to the best of my Skill, impartially observed them) I never could really find any. And it seems very probable to me, that the Reputation that these sorts of Medicines have obtained in this Disease, are rather to be ascribed to a certain Happiness in their Use, than to any Virtues of their own, in that young People, and sometimes others, have occasionally had their Skins dy'd or stain'd with a slight and superficial Yellowness; sometimes without any previous Illness, and sometimes succeed *Gripings*

or Pains about the *Hypochondria*, whereby some are induced, from that Colour, immediately to call it the *Faundice*. And it is certain, in this Yellowness, that most have recourse to these ordinary and well-known Medicines, which Symptom commonly in a short time disappearing, the Cure of what they thus call the *Faundice*, is attributed to the sovereign Effect of the Medicine, and it becomes applauded as infallible in that Disease: When in truth, the Medicine had the least share in it, or at least Nature would have performed it without such help; for I have often observed it gradually to vanish without any such assistance; because this Yellowness, altho' call'd the *Faundice*, did not proceed from any settled hindrance in the natural Course of the Bile, but from a short and temporary one; which it is probable, by reason it so often follows Pain, may be occasioned by some nervous Constriction upon the Passages, which being but of a short continuance, for the hurry from the Pain being sedated, all things do gradually return to their former state. It is true, sometimes an unusual Yellowness arises, where the Bile does not appear either by the Stools or Urine to be affected, but this only proceeding from an ill Dyscrasie of Blood, and not from any hindrance in this Juice, is only to be remedied by invigorating that which is not here our Enquiry.

VI. It is, I must acknowledge, to me a question, whether Art, Chance, or Skill hath as yet discovered any one Medicine, Receipt, or Preparation, that doth only and particularly affect this Separation. For most of such as have formerly, or do now bear the highest Characters, and have been in greatest use, are such as alter and enlarge other Separations equally with this: I shall only instance in *Castile* or *Venice* Soap, and Acidulous Waters, which, not to mention what they perform in the Bowels, do, it's evident, affect the Urine; so that in their regular Operations they seem to no more than dispose the Blood to *Separations*, and so amongst others to these. However, it is not improbable, this *Separation* may be encreas'd or alter'd, by reason it is not always equal; although the direct manner of doing of it, may be as yet undiscover'd. Nay, it is most apparent, it may be altered, in that it is sometimes internally obstructed; which could not be, but that some unlike or incongruous Parts must pass, which being there parted and left, do some ways stop or alter the Vessels, or form some preternatural *Substance*, which becomes a hindrance to the free passage of this natural Juice: For it is evident, whatsoever *Substance* or *Matter* that internally occasions this hindrance, must have been derived from the Blood, notwithstanding it gave no disorder to that, until

passing this way, it caused this hindrance to the Bile; and then the Blood being vitiated from this Cause, is not to be bettered but by the removal of it.

VII. However, those Symptoms that having been taken to appertain to what hath been commonly termed a *Jaundice*, being sometimes associated with others that are very differing from what are usually in that Disease; Physicians have been oblig'd to investigate new Methods that might be better suited to such Cases; thus when the *Blood* hath boiled with a *Fever*, and the consistent Parts have been melted with heat; the Skin perhaps being stained with a Yellow, and the Water of a dirty Red, the Disease hath been called a *Jaundice*, and so the Medicines that have been successfully used in these Cases, have been called *Anti-Idricks*; and it is this, it is probable, that hath recommended oleaginous Seeds in Emulsions, Decoctions, or in Milk. And with the same reason, the *Cortex* may be justly number'd amongst them, since that effectually cures the Yellowness, where such Heats have Intermissions; whereas on the contrary, where the Blood's cool, its Motions languid, its Crasis loose, although accompanied with a Skin stain'd with a flavid Tincture; such Medicines would be so far from curing it, that they would encrease it: And on the contrary, *Steel, Aromatics, bitter Wines, Exercises,*
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and such things, will be the only effectual *Anti-Ictericks*.

In short, the Sum of all this is, That where there is an unnatural and continued hindrance, in the ordinary course of the Bile, there can be no Remedy for those Symptoms, that collectively taken, constitute the *Faundice*, unless that can be removed. That there can be but two ways directly to effect this, *viz.* either by the Motions of the Stomach and Bowels, or by the Bile it self, by the means of the Blood. The manner of the first is obvious; the second difficult, and not well to be conceiv'd, that the Event of this Disease altogether depends upon the Nature of the Obstruction. But that every observed Yellowness, although perhaps call'd the *Faundice*, does not proceed from such Cause, nor doth not require the same Method, nor of consequence the Success, will not always be the same.

C H A P. III.

Although most of the Diseases that we call Chronick, that now prevail in this our *Britain*, seem in some measure to be the Off-spring of a luxurious, or too seden-

tary and unactive a Life, (excepting such as succeed to acute Diseases, or such as being local, evidence themselves to be otherwise;) yet I think no one Disease in all the Tribe of Chronicks, gives a brighter Proof that it is derived from thence, than the *Gout*; in that it shuns the Dwellings of loathed Poverty, to take up a more delightful Residence in the Chambers of the Rich and Great; and in that it is not confined to Countries or Places, but always makes its Abode in Ease and Plenty. But that I may not lay a Stumbling-Block, or give offence or occasion of Censure to some who are tormented with this Disease, and yet lead a very sober, temperate and orderly Life, I shall beg leave to explain what I intend by the Word *Luxury* (although I do not assign that the only Cause:) I do not understand by it, an Excess only in Eating or Drinking, but also a continued Use (although moderately) of such Foods and Drinks which seem more befitted to please the Palate and warm the Head, than to restrain our Hunger, and gratify our Thirst; that seem to yield more Pleasure than Nourishment; that seem to remain too long in our Bloods, or give a disturbance whilst they are there; such things that shew their Enmities to our Natures, by the Disorders they create when too liberally received; and which incorrupt-
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ed Nature neither covets nor desires; and therefore seem not befitted for such Uses.

II. Such being the natural State of Man, as that his Body is under a constant Vicissitude and Change of Parts, continually wasting, losing, or some ways discharging some; and of consequence, to continue his Being, daily requiring a fresh Supply of new ones, to repair what is thus wasted, and to recruit what is thus wanting. But if he will take that for Aliment, that doth not seem to be befitted for it; and in quantities too large to be useful, and yet take no care to discharge it, it can be no wonder if what he thus takes for his Pleasure, becomes the Cause of his Punishment, since our Bodies are in measure, and our Wants within bounds.

III. It is true, infinite Wisdom not seeing it fit to commit the Dominion and Sovereignty of our Lives to our selves, and our fleeting Condition requiring a continued Supply of Aliments, hath mercifully engrafted in our Minds a Perception of Pleasure in the taking and receiving of them: And likewise as a Monitor of this necessary Want, hath so constituted us as to be affected with an Uneasiness, which is hungry and thirsting, by which the Mind is admonished what the Body wants; and likewise as a Reward for complying with these Admonitions, does give a Pleasure in the satisfying of them:
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But then he hath naturally proportioned our Appetites to our Wants, and our Desires to such things as are simple and wholesom, which doth not lead us to Excesses ; naturally, I say, for what Man, as a free Agent, may by use bring upon himself, seems to me to be of another Consideration ; because by use he may render things that are at first ungrateful, and even offensive, to become pleasant. For did Men but as carefully observe what Nature, our best Guide, directs, as perhaps the wretched and uncivilized *Indians*, that we call barbarous ; or as all Animals that are not under our Confinement and Government, do ; we might as well be exempt from that *Iliad* of Diseases, that we are now punish'd with, as they for the most part are ; I intend Chronicks, not acute Diseases. For although Infinite Goodness hath so fashioned us, that Eating and Drinking is a Pleasure, and although he hath enriched this Globe with a variety of Beings, which being taken by us, must differently affect our Palates, whereby the Mind must have Perceptions of differing Tastes, which must be more or less grateful, and thereby give different degrees of Pleasure. And although the Mind will naturally lean to what is pleasant, yet that Appetite carries it no farther than to the satisfying that Want that created it ; and what goes beyond this, is what is acquired.

IV. But how, or by what steps this unhappy Usage is acquired, is not much material to my purpose; since it is most certain, there are but few of the Masculine Gender, even of the most Abstemious, (such now is become the manner of living amongst those whose Birth, Qualities, or Fortunes will permit) but a due Consideration had to the Nature of their Meats and Drinks, the Manner and Method of taking them, the little Exercise or bodily Motion they use for the consumption of them, but must receive more than what can be applied for Repairs and Nourishment: And whatsoever is admitted into the *Blood*, that cannot be converted to such Uses, nor cannot, by reason of the Quantity of it, or by some Unfitness in its Qualities, be timely separated and discharged by the Secretory Vessels, or Natural Passages, must naturally, by too long a Stay there, create Disorders, which if they do not break out in any sudden and violent Disease, must gradually form some slow ones, which are usually denominated from the Part they affect.

V. If therefore in our Eating, we prefer our Pleasure before our Hunger; and if in Drinking, the warming our Heads before the gratifying our Thirst, by which means we daily ingest such things that cannot be appropriated for natural Uses, nor cannot readily pass away by the *Strainories*, neither
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do we consume them by bodily Exercise; it is no wonder if they leave some Relicts that become *Seeds* of Infirmities. I would not be misunderstood, I write not this to reproach or reprove Mankind, but to shew the true Cause of the Disease I am now treating; for I am a Man, and as incident to these Frailties, as another. But since Diseases must proceed from these beginnings, and since these methods of living are not without Censure or Danger, to be altered; there can be nothing to prevent the Ills that must flow from them, but by some early discharging what is thus superfluously ingested. But since what is once thoroughly mingled with the Blood, cannot be evacuated until separated, nor separated, but by the Secretory Vessels; and they do not, or cannot separate it; the Mischiefs that arise from these Things must be unalterable, and especially when this is not the Effect of one single Act, but of a continued Course of living. Unless by continued Exercises or bodily Motions, the Parts of the Blood are so agitated, and the Crasis preserved, and such Intervals of time allowed, that what is incongruous or superfluous to the Blood may be spent, before fresh is admitted.

VI. The Truth of what hath been thus observ'd concerning our manner of living, and the natural Effects that will proceed from it, appears in no one Disease so

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conspicuous as in that we call the Gout; for if we circumspectly trace it to its true Cause, by considering the Persons it affects, their manner of living, we shall evidently discover it to be the Off-spring of a luxurious (I ask pardon for the Expression, as wanting a fitter Word) and too unactive a Life; for whatever Pains have been taken to deduce this Disease, from this or that particular Liquor, there can be no fuller Proofs against the Unsatisfactoriness of such Arguments, than to shew by Fact, that it promiscuously affects such that use very different, and even contrary ones.

VII. It hath been an Opinion advanced by some, That the Gout is the proper Off-spring of *French* and *Rhenish*, or thin and racking Wines. It is most certain, that such Wines do, or if you please, that *Claret* brings the Gout; but then the Conclusion is too severe, when they say it only does so. For if we do not too much narrow our Observations in favour of our own Opinions, we may plainly see the Cause of this Disease is not contain'd in the only Use of these Wines, nor of thin or racking Liquors: (Notwithstanding, that such Persons that indulge themselves to the liberal Use of them, are frequently afflicted with it :) Because the Gout appears to have been a Disease well known here in *England*, long before the so general Use of these Wines; by reason we find

find it mention'd in the Writings of divers eminent Men. And methinks the very Word seems to confirm it, for it is very remarkable, we have few native Words whereby we can at once express a Disease; most of them now in use are either *Greek* or *Latin*, or Derivatives from such. This alone, if we had no other Proof, would be an Argument that it was known here before the so fashionable Use of these Wines; which, I think, never came to be so universally drank, until after the Return of King *Charles*, who, by reason of a tedious Exile, became enamoured with the Liquors and Customs of those Countries where he lived, and upon his Return, *Regis ad Exemplum*, the Fashion spread. Because, unless there had been such a Disease, Men could have no occasion for such a Word, the end of Language being to communicate and record our Thoughts. But the true Reason why such Persons, that ordinarily drink these Wines, are so often rack'd with this Disease, seems to me to consist in this, that those who by Birth, Quality, or Fortune, are placed above the common Rank of Men, will in every thing endeavour to distinguish themselves from the meaner sort; as may be observed by their Houses, Clothes, Tables, Attendance, Manners, Fashions and Liquors, and in short, in the whole Course of their living; and the Encrease of Trade having encreased our Wealth, and the Importation

tation of Foreign Liquors: And these Wines being the Prince's Liquor, and passing comparatively quick, as being thin, soon likewise become so to most whose Qualities or Fortunes would permit of the Expence; and such Persons, who could do this by Choice or Use, or for State or Fashion, usually indulging themselves in ease and unactive Pleasures, do often as an Effect, or rather Punishment of such a Course of living, undergo the Punishment of a tormenting Gout. But it is clear, it doth not proceed from the only Use of these Wines, since others, who rarely drink of them, but liberally indulge the Use of strong Liquors, and equally please themselves with Sloth and Ease, are at certain times, as severely handled with it: And thus it was known in *England*, before these Wines were so commonly drank.

VIII. But notwithstanding it is not improbable that the constant Use of these Wines, may sooner dispose Men to this Disease, than our native Malt Liquors, supposing the way of Living to be the same; by reason this, if drank young, is much more prone to work off by Loosnesses: Whereas these Wines being thinner, rarely pass that way, but by Urine or Sweat; which not always equally succeeding, nor spent by bodily Exercise, it can be no wonder if they are afterwards separated, lodged, or deposited upon a Joint; and if Malt Liquors are kept

kept to such an Age, that they only pass the same way, they equally produce the same Disease, as is manifest by Old Strong-Beer ; and in that the Gout is most common when Perspiration, by reason of the alteration of the Air, is hinder'd : For, I think, we may observe here in *England*, that certain and periodical Fits of the Gout, rarely begin in the hot Seasons ; for the Summer's Heat usually unloosens the Joints of Gouty Persons from the Manacles of that tormenting Disease ; and if by accident they fall into a Fit in a warm Season, it is usually then occasioned by some immediate act of Intemperancy, and is seldom lasting as in the Winter Months.

IX. These Reasons drawn from common Observations of the Disease it self, the time of its affecting, and the Persons affected, are Motives to me to think that the common and proverbial Saying of *French Wine* or *Claret* bringing the Gout, is unjustly grounded ; and that this Disease is the Product of that peculiar Liquor : But that strong Liquors not being besitted for the natural and ordinary Uses of our Bodies, being often ingested in such Proportions that all their Parts cannot be spent by the Secretory Vessels ; and not being by bodily Motion continually evaporated, must necessarily form this or some other Disease. And if the Blood deposits what is thus gradually

dually become offensive and peccant upon a Joint, it is then called the Gout; but if thrown upon another Part, it then obtains another Denomination. And that this is the Source from whence the Gout springs, I think will appear pretty evident from these two Observations:

First, In that it is rarely known here in *England*, that such Persons as drink no Strong Liquors, are ever tormented with the Gout; and in such Countries where no Strong Liquors are drank, it is not known.

Secondly, In that such Persons as continually use bodily Labour, are rarely vexed with it: And from this Reason it is called the Gentleman's Disease, or rich Gout.

X. But the better to illustrate what hath been already said, I shall here take a short view of this Disease. The *English* Word, Gout, is used to signify a Pain or some Affection of the Joints, and is taken to answer to the *Greek Arthritis*; and seems to differ from what we call *Rheumatismus* (which likewise often affects the Joints) in that it is commonly more permanent and fixed to the Part where it first seizes; for although it is not always bound up to one only Part, but will sometimes scatter and remove; yet it never so nimbly moves, nor so promiscuously roves from Joint to Joint as that; neither is it accompanied with such violent Heat, or sudden Pain. It usually, I say, not
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always, begins in the Joint of the great Toe, as perhaps being remotest, or some Part of the Feet with Pain ; which is often attended or succeeded by Tumour and Weakness. And the grieved Part, as the Fit declines, or the Symptoms vanish, will ordinarily throw out a sort of branny Scurf ; and sometimes when it hath often repeated upon the same Part, there will be formed a chalky Substance ; by all which, and the great advantages in other things, that accrue to the Person that hath been excruciated with such a Fit, it is evident that there was somewhat peccant or offending, that was separated, deposited, or lodged there, which if it had not been exterminated there, would have given disturbance, or created mischief in some other parts.

XI. I think it not much material to my present purpose, more particularly to enquire why the Joints should be more frequently affected than other Parts, in Men leading these sorts of Life : Altho' perhaps Men may be often mistaken in that Calculation ; because notwithstanding other Parts (from whence Diseases are denominated) should be affected (in proportion to their extent, or to their number) as often as the Joints, or Regions, whose Affections are termed the Gout ; yet it is evident they could bear no proportion to that Disease, the Joints being so numerous and the Regions so extensive ; whereas most other Chronick Diseases are denominated from a Part, and so confined to that, and there-

therefore cannot appear so frequent, should they be as often affected as the Joints.

It is sufficient, for what I intend, that the Blood making a Separation of somewhat that is not agreeable to it, upon the Joints, forms that Disease; and the Blood having thus thrown such peccant Matter upon those extreme Regions, the other Organs, whose Motions contribute to the continuing Life, are by that means freed from any Danger from such Matter: And it is from consideration, that congratulatory Compliment of long Life, to such as are under this Torment, seems in some measure to be grounded upon Reason; because when this Disease is actually formed, Life is not then in Danger from such offending Matter, as being fixed. And when by repeated Fits, the Blood hath took a course of Purging it self this way, it usually continues the same Course. It is true, Gouty Persons (and perhaps usually by their own Faults) are not always exempted from Separations, which make Disorders sometimes in other Parts, as in the Head, Breast, Stomach, and where not; yet such are not frequent; and when this happens, (which usually is by their own Irregularities) they are said to have the Gout in such Parts; by which Expression in the nature of things, no more can be intended than that the peccant Matter that used to be separated upon the Joints, is now thrown another way;

wherein perhaps there may be more danger ; from whence it will follow, that this Separation upon the Joints, we call the Gout, is to the safety of the Diseased.

XII. If therefore Men would but impartially consider what they mean by this Word Gout, and what they really propose when they talk of curing of it, they might plainly discern it is impracticable, and a Vanity to promise to perform it by *Medicine*, since the Disease only proceeds from our manner of living, and then if so, only to be prevented by that : For the Effect of *Medicine* can reach no farther than to evacuate or alter what already is : For of what is not, there can be no affecting ; and here fresh Causes are daily administred, which therefore if not daily spent, must gradually produce it.

XIII. But that Methods may be the better instituted for the curing this Disease, it may be considered as a Fit, and so properly the Gout ; or as only a Habit or Disposition to a Fit. But if as the first, and by the Symptoms it appears that the peccant Matter is perfectly separated, and lodged upon the Part affected, Nature then having done her Office, requires no help from *Medicine* : But if there appears but an imperfect Separation, the Blood then is to be assisted as the Indications require.

But notwithstanding Nature hath perfectly performed her Office, in deposing the peccant

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cant Matter upon a Part, yet the Diseased, either tired with the Pain, or wearied with the Confinement, will sometimes have recourse to external Applications to remove these Evils ; for which reason I shall briefly consider them, and the Advantages or Disadvantages that can arise by their Use, and that under these three Heads.

First, Either as such as repel and drive back the separated and morbifick Matter from the Part where it is lodged.

Or, Secondly, As such as are thought to waste and evaporate it from thence.

Or, Thirdly, As such as seem principally to assuage and sedate the Pain.

As to the first of these, it appears *prima facie*, unsafe and dangerous ; for this Separation being to the Advantage of the Diseased, to repel or drive it back, is unnatural, and may be fatal, and in no one Case ever to be practised.

As to the Second, it looks at first sight somewhat reasonable ; but if we but seriously attend to what Nature in this Case does, we may easily conclude, it can only be specious, and indeed trifling : For the Peccant Matter here lodges, because it is not befitted to evaporate thro' the Pores of the Skin, which afterwards it gradually doth, as appears by the vanishing of the Pains, the falling of the Swelling, and by that branny Scurf that covers the Part. And when it is not accom-

modated to pass those invisible Pores, it then forms hard, knotty, and chalky Substances ; and to stimulate it to pass, when it is not befitted, is only to give a Disturbance that may be dangerous, in removing peccant Matter that is already settled.

As to the Third, It is certain so long as we are in possession of Divine *Opium*, we have a Weapon whereby to blunt the sharpest Pains ; but then the Question is, whether in this Case we ought to use it ? To me I think, if we prefer future safety before present Ease, which I think, we ought to do ; where there is no imminent Danger, we ought not. For *Opium*, as I have formerly shewed, alleviates the Pain, by only quieting the Spirits, but it does not in the least waste that separated or fixed Matter that caused it, in which only consists the Cure, with any Safety to the Diseased. Besides, although *Opium* does not hinder Separations in the general made from the Blood, yet it often accidentally does particular ones ; for a Separation once made upon a particular Part, may be continued or encreased by the *Motions* of the Fibres of the Part, which *Motion Opium* will quiet ; and hence sometimes a farther Continuance of that Separation may cease, which otherwise by this *Motion* which causes Pain, would have been encreased ; so that *Opium* in imperfect Separations attended with Pain, may be extreemly dangerous, by reason the
peccant

peccant Matter which is there fixing, is continually invited by Pain to flow that way ; whereas this being by that thus stupified, it is not enticed thither. In short, *Opium* in the Gout, may give present Ease to the Diseased, and Reputation to the Adviser, but can never spend the Matter, in which alone the true Cure and Safety of the Patient consists. For these Reasons, I think, all Fomentations, Plaisters, Oils, or Unguents, or any outward Applications whatsoever, ought, as things pernicious, in the beginning of a Fit, to be expressly forbidden, and in the latter end, rarely, if ever to be advised.

XIV. But if the Cure of it is proposed as a State or Habit, by which must be intended a Disposition or Capacity of Blood, at sometimes to separate or deposite peccant Matter upon the Joints. It is then to be considered that such Matter could not be so, *de novo* made, but that the Blood is supplied with Materials for it ; which are produced, as I have observed, from our manner of living ; and then it will follow, that the preventing Fits of this Disease, must absolutely depend upon one of these two things, either in the not administering Matter fit for it ; or if such, by reason of our way of living is administer'd, in the continual spending of it, that it may not be so congested as to come to form a Fit. For, as to what may be pretended to be done, in order

to alter that present ill Temper, State or Habit of Blood, from which may be insinuated, future Ills may arise, will, I think, if truly weigh'd, be found only specious. For we may consider, that all Persons after a Fit of the Gout, must be either well or ill; if the first, then it is plain, that neither the Blood nor other Juices can be under any unnatural Disorder, by reason the Man is well; and if so, then it is evident, requires no Alterations. For Health is the ultimate End of all our Intentions, all methods of Physick only aiming at altering the Juices, that lost Health may be restor'd. If then the Body is in Health, why do we endeavour to change it? For to what would we alter it? Can it be bettered when it is already well? This is certain, by attempting to alter it when it is well, we may, by a specious Pretence of preserving Health, destroy it; by altering indeed, but so as to pull on Diseases, which by a trifling sort of reasoning, we would have prevented. For if Diseases, in the general considered, are only Changes, as it is most certain they are; for he that is sick, is not as he was in health: If a Man therefore is already in Health, to what would he change? Would he be better than well? Sure it is sufficient to be so: This is certain, there can be no Medium, no neutral Estate between well and ill, although several Degrees in both. If therefore, after a Fit of the Gout,

a perfect and uninterrupted Health is enjoyed, the Whole needs not a Physician, and such a state requires no Alteration, and therefore Physick, not only unnecessary, but unsafe. But if after a Fit of the Gout, the Person that hath been so affected, remains in an unhealthful state, such methods ought to be enjoined as the then Indications require, and as in all other Cases, without any regard to be had to any preceding Species of Disease, but absolutely to be regulated by the present Symptoms, as has formerly been proved.

XV. But to return, if we rationally endeavour to prevent the Gout by supplying the Blood only with such Juices that will not be converted into what will produce it, it is evident, it must be done by the means of Diet. Or if such is become our accustomed way of eating and drinking, that such things are daily ingested by us, as Experience teaches us, will generate such Matter as will occasion it; there can be no Methods then whereby to prevent it, but by daily wasting or spending such Matter, that it may not be congested in the Blood, whereby to form this Disease; and this in all probability, will most effectually be done by bodily Exercise. For if we attempt to exterminate it by the help of Medicine, we ought first to consider what can be within the power of Physick; for the Operation of all Medicines may be considered

dered either as they evacuate, or as they only alter. If therefore it be by the first, there must be somewhat already peccant, because all Evacuations presuppose (if rationally administred) somewhat to be evacuated; and what here should be by that discharged, perhaps is not as yet made, because being not prepared at once, but gradually made, as being only what is superfluously left of what we eat and drink; and so then impossible to be evacuated, because as yet it is not: So that if we pretend to prevent it this way, our Evacuations must be repeated as the Causes are to be administer'd; and how practicable that is, will easily appear, if we but consider that the Cause is taken in with our daily Food. And yet this seems to be the only rational Method to perform it by Physick; if Men persevere in their accustomed way of living. For the forming a Fit, being only the Effect of an unnatural Separation made upon the Joints; if that Matter could have been continually discharg'd by another way, then it is plain, it would not have been there separated. But this Method being, by reason of the Trouble, Loathsomeness, Pain, and Uneasiness, too heavy a Penance to be undergone, will, as I guess, be never thoroughly experimented. Neither could there be any Assurance that the Success would always answer the Intention, should it be religiously pursued. For
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although by forcing Evacuations, something is always discharged, yet we cannot be assured that will be peccant, as we sometimes too unhappily experience. For notwithstanding we may observe, that such strong Liquors as being plentifully drank, discharge themselves by *Diarrhæa's*; and such ways are not so prone to create Fits of the Gout, as such as pass usually by Urine; yet we cannot safely conclude, that the often creating Purging by Cathartic *Medicines*, after the taking such inordinate Quantities of these Liquors, would have the same effect. Because the first may proceed from a Separation made in the Blood it self, by the means of the Liquor, it putting the Blood upon purging it self, by someways disordering it. Whereas the last is only made by the *Medicine* irritating the Bowels, and so the Separation from the Blood, is only secondarily effected by that Irritation.

XVI. As to the Use of other sorts of *Medicines* comprehended under the Term of Alteratives, they likewise, let there Effects be what is possible, can only alter what already is, but can never affect what as yet is not: And this Disease being only the Produce of some useless, unnecessary, and incongruous Parts, which being unfit for natural Uses, and not exterminated by the Secretory Vessels, remain in the Blood; and being continually supplied by new parts from our daily
Liquors,

Liquors, cannot be altered or destroyed, because it is daily generated, unless by something that is as daily taken, as this is that daily creates it. So that were we really Masters of such a Secret, yet it could be of no Advantage, unless in almost constant use: Besides, the very Notion of such a thing, is a direct Contradiction, for Quantity is to be lessened, not altered; and Mens Tempers, Liquors, and ways of Living, are too different for such Catholicons. But to return, there is nothing more clear than that the Matter that causes what we call the Gout, is *de novo* generated, by reason a regular Fit perfectly spends what caused it. As is evident by the entire vanishing of the Symptoms, by the Advantage the Diseased reaps from it, and by the apparent signs of the evaporating the Matter from the very Part; so that another Fit could not be *de novo* formed, if new Matter was not again generated, and that proceeding from what we daily eat and drink, cannot by *Medicine* be altered in us, before it is taken by us. For which Reason it now only remains to enquire what is farther to be done, if Men will endeavour to prevent this Disease. And that must be by Diet or Exercise. For as for Physick, whether such as evacuates or only alters, I think I may with as equal Reason expect to be able by the means of such, so to alter or change my Body, that an immoderate quantity of strong
Liquors

Liquors should not have that Effect upon me, as not to intoxicate my Understanding, impair or subvert my bodily Strength or Motion, or disorder my other Faculties, as that they should not by a continued Use produce the Gout; that being in some Bodies as much the slow, but certain Effect of such Liquors, as the other is the sudden and observed one. For as the former is the genuine and regular Effect of strong Liquors, which no Physick antecedent to their Use can prevent: So where this Disease is the slow, but certain Effect of them, no preceding Methods can hinder. For all *Medicines* being natural Substances, can only operate where they then are, and therefore can never affect what as yet hath no Existence: 'Tis therefore to Diet and Exercise we must apply our selves, as being the chief Bulwarks to defend us against the Approaches of this tormenting Enemy.

XVII. By Diet, I understand whatsoever we eat or drink for our Nourishment, or for our Pleasure; by Exercise, I intend all bodily Motion; and if therefore this Disease is contracted by an Error in these, it is most probable to be prevented by changing them. And this seems to be confirmed by Experience, in that several Persons that have formerly been severely tormented with this Disease, have deliver'd themselves from such Sufferings, by undergoing the Punishment, Penance, or indeed

deed Danger of a Milk Diet, or have at least renounced Wine, and strong Liquors, and betook themselves to Water, or Milk and Water. But by this Means, although they may have defended themselves against Fits of the Gout, yet by making so great and sudden a Change in their accustomed method of living, they have so altered their Tempers, as to bring upon themselves greater Mischiefs. For it is very remarkable, that such is the Nature of our Bodies, that whatsoever by a continued Use, is become habitual and so agreeable to us, cannot without manifest Danger, be left or disused; thus have some in an habitual and unhappy Intemperancy, enjoyed a steady and uninterrupted Health; and by too sudden a Change in renouncing that untoward Usage, have, maugre all other Endeavours, been immersed in a Legion of Infirmities.

XVIII. If then the Gout is the undoubted Off-spring of such a Life, and yet such a Life cannot, with personal Safety, be suddenly altered; and if the Power of *Medicine* is not sufficient to expel or destroy such an inbred Enemy, by reason it is continually recruited by our daily Bread. And yet such Persons that often labour under the Torments of this Disease, are always desirous to be exempt from its Sufferings, and to be delivered from its Confinement; I shall therefore now enquire what is to be safely done

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in order to prevent, or at least to exempt such, a longer time from the Insults of this cruel Enemy. And that must consist not in the direct changing our Diet, by reason that is dangerous, but in moderating the quantity of it, that no more may be ingested than what reasonably may be applied for natural Uses; or if this may be thought too severe a Rule, and that no more than what may be well purged off by the Secretory Vessels; or at least that there may be time allowed for that Performance, before the Blood is loaded with new Juices. And not only so, but that Exercise may daily be used, not by Fits only and violent, but slow and continual, so that our Blood may by that means so far be moved and exagitated, that it may the better preserve its Crasis; but yet not hinder or alter particular Separations, which violent and immoderate Motion will sometime do: Besides, it ought to be such, that all our Limbs may be employed, that no depending Parts may have leisure or liberty undisturbedly to receive any unnatural Separations; for Motion it is plain, prevents and hinders the settling and fixing of Parts; but to make it useful and healthful, it ought to be moderate and continued; and not by Fits only, and violent, which rather disturb than preserve our Healths. For that continued and moderate Exercise, will spend that peccant Matter which forms the Gout,
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and which doth not pass off by any other Passages, seems manifest from these Reasons.

First, Because such as have from their very Youth been accustomed to continual Labour, and never make an Interruption in it, are never, as far as I could observe, afflicted with the Gout.

Secondly, In that it rarely seizes or begins in the hot Months; (I mean the periodical Fits) for if sometimes it does, it seems then to be the only Effect of some sudden and certain Cause, and seldom continues as in the contrary Seasons.

Thirdly, In that those that are manacled with the Gout, are ordinarily in the Summer Months freed from its Chains.

Fourthly, In that such Persons as sweat freely, and especially upon the Feet, are rarely punished with it, although by their way of living, they seem to deserve it. Or if by chance they are, it is seldom severe, and never, as far as I could observe, until that Sweating was stopped.

Fifthly, In that a Fit being formed, the peccant matter is plainly spent this way, as may be concluded from what appears from the Part affected, as has been observed. From these Reasons deduced from Observations, I infer, that could Persons that have been tormented with the Gout, and who have Strength and the natural Use of their Limbs, be prevailed upon to moderate Exercises, and

to renounce their Ease, they might, it is very probable, persevere in their accustomed way of eating and drinking, without the so frequent or severe Punishments of this Disease, and that without creating any other Infirmities.

XIX But this I am sensible will incur Censure, and will be thought a severe and impracticable Penance, the Remedy perhaps being esteemed worse than the Disease; for such Persons that have long pleased themselves with a Bottle and Conversation, cannot, I presume, so far renounce them even to possess these Advantages: Such therefore must enjoy their Choice, but will not always their Ease. And the only probable means, whereby such can be protected from the Miseries of that Disease, must be by repeated Evacuations, which, how far they will succeed, must be learnt from their Use, which I doubt not, if timely and judiciously administer'd, may sometimes defer their Torments.

The Sum of what hath been here said, is, *Recapitulation* that the Gout is the only Produce of a fashionable and easie Life; that therefore if we daily administer Matter for it, it must be formed, unless that can be by some other ways continually spent: And that is best performed by bodily Motion; but where Conditions or Circumstances are such, as that cannot be undergone, Recourse may be
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had to repeated Evacuations, which if judiciously adjusted, and precisely timed, may sometimes discharge the offending Matter, and so defer a Fit. That a perfect Change in our Diet and Liquors may prevent it, but that not to be practised, because very insecure and dangerous. That the most we ought in Prudence, or can with Safety, in respect of our Diet, suddenly do, is only to moderate the Quantity; or if we will attempt to alter it, to do it by gentle and slow Degrees, all great and sudden Changes being unsafe.

C H A P. IV.

Of the Dropsie

A Dropsie in propriety of Speech, and in the common use of the Word, is taken to import a watry Swelling of part, or of the whole Body, and is distinguished into several kinds, which are differently named according to the Part or Parts they affect; thus if it be in the Head, it is call'd *Hydrocephalus*; if in the Thorax, *Hydrops Pectoris*; if in the Abdomen, *Hydrops Ascites*; if in the Scrotum, *Hydrocele*; but if it appears about the Skin, the Fleshy Parts, or Intestices of the Muscles, whether only in the Legs, or in other parts, or
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over the whole Body, it is termed *Anasarca*. However, where, or in what part soever it is observed, it is a ferous or watry part of the Blood extravasated, that is, departed or divided from the common Mass, and so being out of its Vessels, it is not within the power or reach of the circulatory *Motion*.

II. And these watry *Swellings* may, in respect of themselves, be considered under two Heads. First, such as are purely local; by which I understand such as do not seem to owe their Origin to any Default in the Blood, but merely to the Part where collected; and these when they appear outward, are usually only called watry *Tumours*, being often contained in a particular Membrane, and may be often observed to proceed from some external Violence, as Bruise or Fall, whereby the Part being injured, becomes a Receptacle for Water, and these never recede by any posture of Body. But if these are formed inwardly in a part of the trunk of the Body or Head, they seem to arise from some hindrance of the *Lympha* in the part, and not from any redundancy of it, and being contained in their own *Membranes*, are called *Hydatides*: And these are extreamly different from what we call a Dropsie: First, in their Formation, as not proceeding from any disproportionate quantity of Water in the Blood, but from a local Fault, which appears in that they never remove nor extend themselves farther. Se-

condly, they differ in their appearance, as being more raised, not so readily yielding to the pressure of the Fingers; or if they do, they immediately return to their former Surface, no Mark, Impression, or *Fovea* remaining, being best known by their Transparency, want of Colour, and absence of Pain. Thirdly, in their Cure, for being only local, it is meerly Chyrurgical, Internals of little Use, the Water only to be discharged from the Part.

III. The other sort, which we properly call Dropsies, is a white watry *Swelling*, caused or made by the dividing, parting, extravasating, or lodging of the serous or watry part of the Blood, in this or that Part; (and not contained in any particular Membrane) and seems to proceed from a disproportionate quantity of Water, in compariton to the other parts of the Blood; which if affecting the Legs, or any other external parts of the Body, do readily yield to the pressure of our Fingers, and but slowly recover their Surface, the Dent or Mark not presently receding, and the Skin often shines and glitters from the contained Liquor: And these are observed to lessen upon change of Posture, being generally to be discerned lesser in the Morning upon first rising, and gradually swelling and becoming bigger by Night. But if the Dropsie, or Collection of Water, is in some inward Cavity of the Body, it

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cannot then, by reason of the formation of the Parts, be discovered by the former means; here therefore we must have recourse to other Enquiries for our Information, besides that of the *Swelling* upon the Part, as whether there is any Perception of weight or swashing of Water, upon the turning or change of Posture of the Body; as likewise what hath been collected from what after Discoveries have taught us, that shortness of Breath, Pressing, Thirst, and Paucity, and Colour of Urine, have ordinarily been concomitant Symptoms or Signs of this Disease; the Reasons of all which are so obvious, by what hath been already said, that they seem not to require a farther Explanation.

IV. The Blood, the Spring from whence this stagnating Water flows, is naturally preserved in such a State, that no portions of it recede out of the proper Conduits in which they move, but such as are by Nature destined to waste by the Secretory Vessels: But when its progression is check'd or hinder'd, or when its Crasis is so relax'd or broke, that its parts dissociate or divide, it is then it either profusely discharges them, or that some of them stop or lodge, from whence these watry *Swellings* proceed; for the thin and serous Parts easily insinuating, where the grosser cannot promote, gently creep out of the Conduits in which the grosser move; and then being once removed out of the

reach of the Circulation, do by their own weight subside, until being hinder'd in any farther descent, they form those Cisterns of Water which we call Dropsies.

But notwithstanding all such Collections of Water are indiscriminately termed Dropsies, yet since the Secession of such Ponds of Water, may be procured from very differing Reasons, therefore the same Events will not always follow the draining of such; for notwithstanding by the evacuating this Water, the tumified Parts return to their natural bigness, the Dropsie is then cured: (For it is plain, if what makes the Disease is removed, the Disease must be so), and yet perhaps the Diseased not bettered: For it is one thing to remedy a Disease, and another thing to cure the Diseased. This, perhaps, to some will appear a trifling distinction, and yet, I am perswaded, if seriously weighed, will be found of use, as will better appear by what follows.

V. If a Dropsie then be an entire Disease of it self, by which I understand is not symptomatical, and dependant upon some fixed and permanent Cause, external to the Blood, *viz.* from some default in a consistent or organical Part, as Rottenness, Tumour, change of Texture, or such like; but proceeds entirely from some Weakness, Looseness, or want of Union in the Mixture and Crasis of the Blood it self, as when it succeeds Hæ-

morrhages,

morrhages, Agues, or so forth; or from want of agitation of its Parts, as in what is called Obstructions in Women, or such like; here by discharging the Water, the Dropsie is cured, and by restoring and invigorating the Blood, the Diseased is remedied. But if the Cause is external to the Blood, that is, the Disease is occasioned by some ill Affection of some organical part, as Rottenness, Putrefaction, Tumour, corrupted or extraneous Matter, made or contained in any part whatsoever: (for we may often observe anasarcaous Swellings upon the Legs, attend even corrupted Lungs:) Or whether from Hardness, Putrefaction, want or hindrance of Separation in the Liver, or from any Scirrhusity, Sponginess, Obstruction or Change of Texture in the Spleen, or from any Default or Alteration in the Kidnies, Pancreas, or any other Secretory Vessel, or from what other Cause soever that does not appear to be in the Blood it self; but that the Blood is depraved or thus altered by receiving extraneous Parts, or else retarded or hinder'd in its progressive Motion, by the means of something preternatural in these Parts; by which the Crasis of the Blood is so relaxed, that the watry recede from the other: Here I say, although the extravasated Water should be discharged, and so the Dropsie at the present remedied, yet the Diseased will not be thereby cured. For the Cause of these Mis-

chiefs yet remaining, either these will be *de novo* generated, or worfe Evils will ensue.

VI. There are but few Hydropical Cases, if there is a Temper and Constitution of Body, Firmness of Parts, and Order and Tone of Spirits, as will but safely permit of violent and repeated Evacuations, but may be discharged by the common Passages : Or, at least, if they cannot that way, (which, by the bye, is very extraordinary) they may be from the part it self where collected by some sort of Aperture made there. But if this Disease is but the Effect of such a Cause as cannot be remedied, it is but to little purpose to attempt its Cure either way, since by so doing the Diseased can only be endanger'd, but never remedy'd. Because all Evacuations that discharge Water, must be violent, and being so, must be dangerous, when some parts appertaining to the *Viscera*, are someway unhappily affected: Besides, it seems to little purpose to discharge Water, when the Diseased cannot be bettered by such a Discharge; as it is certain he cannot, when the Congestion of Water proceeds from some Faults in the Organs, unless that Defect could likewise be remedied: And how little a way our Art or Skill reaches towards the repairing, altering, bettering, mending, or curing any Rottenness, Tumour, collected Matter, change of Texture or Conformation, in any internal, consistent,

or

or organical Part, that is, such where no Application can be immediately made to the Part it self, I shall shew in the following Chapter. This only I shall here farther remark, that as Purging is the most usual, so it is the most powerful Operation to discharge Water thus collected; and if the Body of the Diseased, during the Operation, be kept in such a posture, that the Water cannot so readily subside and fall downwards, it may be the more plentifully emulged into the Bowels, and so that way discharged, as I have sometimes experienced. Neither doth it seem much material what form or sort of Purgers we use, so that they be such as work powerfully; for the quantity of Water evacuated, will not be found to be from the sort or kind of *Medicine*, but according to their Operations, and whatsoever works most violently, will discharge most Water this way.

C H A P. V.

Of a Consumption.

THE Word Consumption, when applied to signifie a Disease appertaining to a humane Body, is taken in the loose and general Sense, to import a Wasting of the solid and consistent Parts. But by reason that is found

found frequently to be caused or derived from, or at least accompanied with some faultiness or decay of the Lungs, it is now usually by way of Eminence, applied to that only, and then it is taken to signify a Wasting of the consistent Parts from some Rotteness, Exulceration, Putrefaction, Tumour, unnatural Matter, Decay, or Alteration in them. And is supposed to answer to the Greek *Pthisis*, or Latin *Tabes pulmonaris*. The Cough, Hoarseness, shortness of Breath, often Uneasiness in or about the Breast, the bringing up and expectorating foul, purulent, and unusual Matter in some diseased Persons, do give us probable Proofs that the Lungs are some ways affected. But the Dissections of the Bodies of such as have died under these Symptoms, do afford us undeniable ones that they were so: And the hectic Heats, wasting, or consuming of the consistent Parts, attended sometimes with a large Number, and great Variety of other concomitant Symptoms, as Thirst, nocturnal Inquietudes, profusive Sweats, Loosenesses, a general loss of Strength, and in short, an universal Decay which usually afflict Persons labouring under the former Symptoms, do seem to proceed from the same Reason; because those Symptoms that seem proper to the Lungs, do usually in such Cases precede these. But whether the Lungs or the Blood, are in this Disease first affected, is not much material,

material, since the Lungs are most certainly affected in it. And if they or any other organical Part is so far injured, rotted, or corrupted, as to contain any foul, purulent, corrupted, or extraneous Matter, and that at large, as not bound up in any peculiar Membranes, so that some Parts of it may be gathered up, or received by the Blood, it will taint, contaminate, corrupt, or someways so alter it, that such as the above-recited, or some other unnatural Symptom, will arise.

II. For the Blood being continued in its circulatory Motion by an external Impulse from the Heart and Vessels, will, according to the Capacity of the Conduits through which it passes, be equally impelled into every Part; and so, if not hinder'd, must supply such corrupted Parts as well as others, with fresh Materials, to be changed into such extraneous Matter; and when such Matter is made in such a place, as it cannot be discharged, it must necessarily be encreased, and there accumulated. And by reason the Blood does not always equally fill its own Vessels, must of course sometimes gather up, or receive into it some parts of this thus damned up Matter, which being unnatural and very disagreeable to it, will infect, poison, or some ways alter it, and thereby render it unfit for its ordinary and natural Uses, and so a variety of unusual Symptoms will ensue. For Health, in relation to the
Blood,

Blood, does consist in some natural Temper, State or Condition of it, which if altered, the Man must, as being part of him ; and it is most evident that will be altered by the admission of any unnatural Matter into it, whether ingested with our Food by the common passage of the Mouth and Stomach, or whether sucked in with our vital Breath, or whether made or generated within us, or whether admitted by any other way, all which daily Instances so abundantly confirm, that I suppose it would be thought by most trifling and but superfluous, to produce any particular Proofs. If therefore the Blood is continually infected, corrupted, or altered from some such accumulated, purulent, or extraneous Matter, it is clear the Blood can never be re-established in its former, natural and healthful State, unless this Matter, that is the immediate Cause of these Infalubrious Effects, can be removed and discharged. This therefore shall be the Enquiry, What means, methods, or helps we can have, whereby to mend, alter, better or cure such Symptoms, as are taken to constitute a Consumption, and are derived or caused from some unnatural, unusual, purulent, or extraneous Matter, made, generated, separated or collected upon the Lungs.

III. But that this may be the better comprehended, it will be necessary to remind my Reader of what hath been already proved,

viz.

viz. That every organical and consistent Part always remains in relation to the rest of the Body, in the same fixed and determinate place, and of consequence can neither receive nor discharge any Part or Parts, but by the assistance or means of some other moving Body; and there being nothing common to the whole Body, by which this can be performed, but the Blood, it must be concluded, that must be the Instrument by which it is done. When therefore any such Part is corrupted, impaired, putrified, or someways altered, injured, or unnaturally affected, and is so situated as not to admit of any application immediately to it; there can be no way whereby to cleanse, digest, mend, better, or cure it, but by the means of *Medicines* internally taken; which, if they ever reach the Part, must be conveyed thither by the means of the Blood, there being nothing else in a human Body by which it can be performed, and then such *Medicines* will exert their Powers and Energies there, as I have formerly proved: And the Blood can neither mend, repair, heal, or cure, an injured consistent Part, unless that first be in a state befitted for it, (that is, it will not always do it) as may be concluded from every Days observations, where, notwithstanding some diseased Men eat and drink, yet their Bodies do not nourish proportionably, but rather waste. When therefore the
Blood

Blood is tainted, infected, or someways altered, by the putrid or extraneous Juices it receives from a consistent Part, by which it becomes unfit for such Uses; it is plain, in these Cases in prosecuting a Cure, we seem to move in a Circle; for the injured consistent Part, is only to be bettered or cured by the Blood, and that very Blood is infected, tainted or poisoned from the consistent Part, by which it is render'd unfit for such a Use; and so is not to be remedied unless that Cause can be removed, by which it is thus corrupted, which from the very situation, is impracticable.

IV. But to pretermitt this sort of reasoning, that may perhaps be thought intricate, but not satisfactory, we will descend to the thing it self; but in order to that, we may first consider that all preternatural Affections of the consistent Parts, may be comprehended so far as is necessary to our present Design, under some one of these general Heads.

First, Either under such where they are impaired or ill affected from some corrupt, purulent, sanious, unnatural, or extraneous Matter, made, generated, separated, or collected in them; but lest, as it were, at large, that is, when it is not contained in any proper Cystis, Membrane, or Coat.

Or, Secondly, Under such where such extraneous or unnatural Matter is contained within its proper Coat.

Or,

Or, Thirdly, Under such where a Part is as it were *de novo* formed, and is endowed with its proper Vessels, as natural parts are.

Or, Fourthly, Under such as where some Organ that is born with us, becomes so changed and altered, that it makes and prepares unnatural and offensive Juices, being perfectly perverted in its natural Offices.

When any of the innermost Organical Parts are thus affected, and their situation or formations are such as can admit of no applications to them, there can be no way whereby to attempt the remedying them, but by the Blood; and that is not to be better'd, unless that Cause from whence it is thus corrupted, can be removed; and that in the present Case being situated in the Lungs, is not to be done, as I shall presently prove. But before I descend to that, I must premise what Experience will always teach us, that any purulent, sanious, or corrupted Matter in what Part soever made or collected, and not contained in its own Cystis, will, if it cannot or is not discharged, sooner or later, according to its Nature, do these two things, *viz.* corrode, fret, rot, destroy or injure the contiguous and adjacent Parts, and infect, taint, corrupt, poison, or some-ways alter the Blood.

The first proves it self in that such Matter will gradually work its own way.

The Second may be proved from the Heats, Inquietudes, Uneasinesses, and other Symptoms, always someway or other attending it; and the vanishing of such, when the Matter is discharged.

And these two will always succeed sooner or later, according to the Virulency or Disposition of the Matter, and the Nature and Firmness of the part. And Matter thus prepared, or left in any particular part of the Body, being removed without the power and reach of the Circulation, becomes entirely under the Laws of Gravitation, and so of consequence tends downwards; so that if it is made or generated, or can descend to any part where Nature hath already formed a passage, or where Art can make one; if that passage be at the bottom of the Cistern where this is contained, it will flow out and discharge it self, by which means the adjoining Parts and the Blood, will be delivered from any farther Mischiefs from it.

But when the Lungs, or the Parts appertaining to them, are affected or loaded by such a Collection of purulent or extraneous Matter, which cannot by reason of their formations and situation discharge it self, as having no passage at the bottom, it will certainly produce those two usual and natural Effects, *viz.* The corrosion and spoiling the contiguous Parts, and the tainting and infecting the Blood, and that much sooner than in most other parts of the whole Body.

First, By reason of their Sponginess and their continual Motion, by which means Matter will more easily insinuate into the empty spaces, and spread sooner and farther, being always moved.

Secondly, In that the Blood passes in greater quantities here than in most parts of the Body.

And as these Two are the regular Effects of Matter made and lodged, so on the contrary, if the consistent Part, where it is thus generated, is so situated or fashioned as it can flow out, or so entirely discharge it self, that nothing of it stop or lodge to form new Cisterns or Cavities, such Parts will ordinarily heal of themselves, unless it be in a very ill State of Blood; for the Blood may be so vitiated, as to throw off its Parts too profusely; and then that corrupt State must be mended before the Ulcer can heal. For although the making or separating corrupt Matter, is a performance of the Part it self, yet the Part being altered or spoiled by the State of the Blood, the Blood must be first mended before the Part will ordinarily be healed.

V. But to return, although corroding and spoiling the adjacent Parts, and tainting and infecting the Blood, will always attend Matter thus lodg'd; yet our Bodies being so fashioned, that there are but few Parts in which it can be collected, except the Lungs, but it may someway by Art be discharged; for

306 *Matter not to be drawn from the Lungs.*

although such Organs as are seated in the innermost Recesses of the Body, where neither our Eyes nor our Fingers can inform us, have sometimes contained Matter that hath created Symptoms, not unlike such as have been found to have proceeded from ill affected Lungs: Yet by reason when it hath been timely discovered in such, it hath sometimes been discharged from them, and so not then so dangerous, as when it is made upon the Lungs; by reason it hath never yet, as I apprehend, been attempted by Art to draw Matter immediately from them; neither can I, from a consideration of the formation and use of them, ever believe it practicable. It is true, Matter hath been frequently drawn out of the Cavity of the Thorax, and Coughs and such Symptoms that sometimes attend an ill affected Lungs, have accompanied such; but notwithstanding, it is a question to me, whether that proceeded out of them, since such Symptoms, as Coughing, and the like, may be created by an affection of the neighbouring Parts, subservient to Respiration.

VI. Taking it then for granted, that corrupt or purulent, or, if these Words are not comprehensive enough, extraneous Matter made, generated, or collected about the Lungs, and not contained in a proper Cystitis, may occasion Disorders in the Fluids, and Wastings and Consumings of the consistent Parts, attended with such concomitant Sym-

Symptoms, that together constitute what we call a Consumption, and that these being derived from such a Cause, are not to be remedied unless that can be removed. Our Enquiry now shall be, whether it is possible, that such Matter can be so perfectly discharged from them, that these Symptoms may admit of a Remedy.

Whosoever will but survey the Lungs, will evidently discern, that Nature hath formed but one Passage, *viz.* That common and known one of the *Trachea*, whereby Matter made or collected there, can be discharged. And the situation of that, being such as whatsoever passes there, must ascend; which therefore must require some force to perform it, which must be done by some violent and preternatural Motion of the Parts appertaining to Respiration, by reason as the Lungs are placed, there can be nothing else can affect them; and this Motion is what we call Coughing. For it is most certain, that all Juices in a human Body that are not kept moving by the circulating Motion of the Blood, must naturally subside and tend downwards, and therefore are not raised or forced upwards, but by some force exceeding their weight. And the Lungs being nothing but thin Membranes united and knit together, in the manner of Net-work, by the Blood, and Air-Vessels, forming innumerable Sinuosities, and all bound up by a common Membrane,

and seated in the hollow of the Breast, having no Motion common to them, or at least distinct from what may be in the Blood-Vessels, or the branches of the *Trachea*, and being thus situated, that they cannot be pressed or squeezed by any of the consistent neighbouring Parts; and whatsoever proceeds from them being to be raised upwards, it is impossible they can be under any such force, whereby Matter that is there collected, can be entirely raised up and discharged. And indeed, were they capable of having, or receiving such a force, it must be fatal whenever it was used; by reason the vital Blood must be equally impelled up with such unnatural Juices. And yet it is certain, the Lungs are so composed, that Coughing does discharge Matter from them, and that being only by Fits, which usually cease upon the bringing up of Matter; we may conclude, that Coughing is therefore caused by reason these Parts are someways burthened or disturbed by such Matter; and therefore fall into this violent motion, by which such a proportion of it, as is within the reach of this motion, is forced up; which being once effected, the Parts again continue quiet, until by the accession of new Matter, or by some change in the situation of it, they are again solicited into motion, and so Coughing seems to be repeated, as an occasion of it is administer'd by this Matter. And yet
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notwithstanding this admirable Contrivance in the make and situation of the Lungs, they are sometimes so compressed and forced by the violence of Coughing, that Blood is pressed out with the extraneous Matter.

VII. Such then being the nature of our Lungs, that extraneous Matter lodged there, will occasion Coughing; and such being their Structure and Situation, that such cannot be entirely discharged by it, nor safely by any known way; and therefore will sometimes create such Symptoms that are taken to constitute what we call a Consumption. In order then the better to illustrate what hath been already said upon this Topick, for the more easie comprehending of what will follow upon this Head, I have thought it not improper here briefly, according to my profess'd Method, to touch at some other Cases that appear plainly to be the Effects of purulent or extraneous Matter, made or generated in other parts; but this only under some general Heads, and accordingly shall only consider them,

First, When such Matter is made in such part of a Humane Body, that it will gradually make its own way; or at least may be by Art from thence discharged.

Or, Secondly, When it is generated in such part, as by reason of having some natural passage it cannot lodge, but must flow out as made.

Or, Thirdly, When it is prepared in such a part as it can neither discharge it self, nor be by Art discharged.

Under the first Head, I comprehend all Matter made or collected about the Muscles, or near the Surface of the Body, and the Cure of these being for the most part Chyrurgical, I shall pass them over; this only I shall remark, that if they are derived or continued from any ill Discrasy of the Blood, that then must be altered or bettered, before these can well or safely be cured. For otherwise the Blood having continued to separate this way, and if by the Power of outward Applications it is hinder'd in it, it must in all likelihood, transfer such into some other parts: For although wheresoever unnatural Matter is made or separated, it is plain there must be some default in the very Part, by reason the making or letting pass such is not its proper use: Yet there is a marvellous difference, where a consistent part is thus made or continued faulty, by reason of the ill state of the Blood. And that where the Blood is kept in an ill or preternatural State, because the Part is faulty, that is, the Blood is poisoned from the Part. In the first Case the Blood must be mended before the Part can safely be cured; in the last, the Part must be cured, before the Blood can be mended.

Under the second Head, may be comprised Gonorrhæas, as likewise a flowing of some small extraneous Matter at the Nose, Ears, or indeed at any other passage or aperture of the whole Body of either Sex, whose natural Situations are such, that Matter cannot well lodge, but must flow from them. But these, under this Head, being so very different in their Causes, Beginnings and Continuance, it may be necessary for the better comprehending them, to distinguish them into two sorts; as first, into such as seem to have been caused from something actually made within us: And secondly, into such as proceed from somewhat received from without us.

The first of these being ordinarily either the Effect of some Inflammation, which will be painful when ripening, but when once broke, if the Matter meets with no hindrance in its discharge, is rarely of any long Continuance, much Trouble, or any Danger, for it will soon cure without outward Applications; but if the Matter stops, that must be removed. But if such Juices were the Effect of a Separation from some ill Discreasy of the Blood, then they may give Trouble, by reason that must be mended, as may be observed from the *Fluor* from Women, and sometimes even from the Piles.

But the second sort that are affected by somewhat received from without, as I think,

may be particularly instanced in *Gonorrhæas* got in impure Coitions ; there the organical Parts themselves appear first injured by the poisonous Particles then received, which seem to fix first upon them. For we may usually observe the Genitals, and the Parts appertaining and adjoining to them to be severely afflicted, long before there is any appearance of the effects of this Poyson, in any of the remoter Regions ; whereas had it immediately passed into the Juices, it must have been by them quickly whirl'd about the whole Body : It is not improbable the reason may be that the raging Lust and hasty desire of Pleasure, felt in Congress, may have a power to dilate or someway so to affect these Parts, as to render them more susceptible of the poysonous Steams ; besides, perhaps the Emission yields a kind of vacancy for their Reception. And these thus injur'd Parts, being so far seated within us as not to permit of Applications immediately to them, whereby to evaporate such Poysons, nor to remove or hinder them from corroding and ulcerating the Parts upon which they fix, they gradually come to separate and make such Matter, as constitutes a *Gonorrhæa*. But be it as it will, it matters not to what I chiefly aim at ; for I think it is certain these Organical Parts are usually first affected ; and the Blood only afterwards from them, by reason if this running by the

Urethra

Urethra is untimely stopt by improper Applications, the Blood becomes much the sooner infected by the Poyson; as evidently appears by the variety of succeeding Symptoms, which will after that soon break out in very differing Forms. It is true, the Genital Parts being thus alter'd and injur'd by the Poyson thus receiv'd; and being continually supplied by the Blood with fresh Matter, to be converted into such purulent Juices, that flow by the *Urethra*; the Blood afterwards becomes poysoned from these Juices, notwithstanding their Issue is not entirely stopt; however, this arising sometime afterwards, seems to be derived, in that the Efflux of such virulent Matter, is often by the various Postures of our Bodies, somewhat for a time retarded; for it is manifest such Matter cannot flow with the same Freedom when our Bodies are in a place, as when in an erected Posture.

However, if by repeated Evacuations the Blood is robbed of such Juices, that would have been converted by the thus injur'd Organs into such purulent Matter, that Matter will gradually lessen, and its Virulency abate, and the Parts will contract and heal, that is, recover their former natural State. This being certainly so in Fact, it must be one of these two Things that occasions that mighty Difference, so often to be observ'd in the facility and difficulty of curing *Gonorrhæa's*
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(supposing the Persons affected to be equally governable) that is, either according to the Degrees in the Virulency of the receiv'd Poyson, or according to the disposition of the affected Person. If a healthful Person, such a one whose Blood and Juices are uncorrupted, that is, in a perfect natural State, be affected, although according to the degrees of its Virulency, it may require more or less time, yet it will be remedied without much difficulty. But if one is severely affected, whose Blood and Juices are much depraved and vitiated, and so perhaps disposed to preternatural Separations, or perhaps on the contrary, to Inflammations; here these organical Parts being thus injur'd, readily become the Receptacles for such *Peccant Juices*; which being farther chang'd by these *Parts*, become a new Contagion to infect the whole Body. So that such a case may prove a Work of difficulty, and require great Thought, as well to correct and mend the Blood, or so to dispose, it as that the affected Parts may be cur'd. For where there is nothing more requir'd to be done, but curing these diseased *Parts*; and the Blood and Body is well disposed for Evacuations, here they alone, if judiciously administred, and rightly adjusted, will be always found a sure and effectual Remedy. For the purulent Matter there made, being continually spent, and the *Parts* not receiving proportionable Supplies, will

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naturally and gradually heal, that is, recover their former State, by reason the Matter not stopping, and the poysonous *Parts* wasting, there can be nothing to hinder them, there not being fresh Juices to do it, they being carried and turn'd another way. And any Evacuations in this Case, where the Body is well-disposed for them, whether by Vomitings or Glysters, if strong enough sufficiently to move the Bowels, and repeated often enough, will here perform what is usually done by Purging: This I only speak as to their general Use, but not Expediency, as being incumbred with more Trouble and greater Inconveniency in both, and contingent danger in the First. And I doubt not but a Salvation, if tried, would equally do it. I would not be misunderstood, I do not recommend it. Nay, I disapprove it; for this Case, if judiciously handled, can never require so severe a Remedy: But a Salivation turning the Juices by plentifully discharging them another way, must of course hinder the *Parts* affected of their usual supply, by which means they may, as in the former Case, recover; but of Salivation more particularly in the following Chapter.

Under the third and last Head may be comprised all Diseases proceeding from extraneous Matter, so made and contain'd, that it cannot discharge it self, nor be discharg'd, without manifest Danger to the Life of the
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Diseased ; as when such is prepar'd or collected in the Brain, Heart, or upon the Lungs, or such like, for the Use, Structure, or Situation of these Parts being such, that the Matter forcing its own Way, would be for the most part fatal ; and the Uncertainty and Danger that must attend such Operations, have as yet deterr'd Men from attempting them. For as what hath been perform'd in what we call an *Empyema*, does not come up to what we are now treating : Diseases then created by such Matter must be incurable.

VIII. But since Men, wasted in a Consumption, naturally desire to preserve even a wretch'd and expiring Life ; and since it is certain they may by improper and irregular Ways of living, untimely break or cut its Thread ; it will follow, that by religiously avoiding such things as are hurtful, and industriously pursuing such as are only beneficial, or, at least, harmless, they may spin it out to a greater length. And since Methods have been establish'd, and Medicines invented for this purpose, I shall here briefly and impartially, for the Ease and Benefit of Mankind, enquire into the Reasonableness of their Use : But that I may do this with some Method, I shall reduce them into these two Heads.

First, Such as seem principally intended to respect the Lungs, that is, the Part immediately affected. And

And Secondly, Into such as only relate to the concomitant Symptoms.

Medicines that may be accounted as belonging to the first of these, may be again considered as of two sorts, *viz.* Pectorals properly so called, and Balsamicks. By Pectoral, I think, may not improperly be understood Medicines that have been esteemed to have a Power to abate or ease Coughing, by helping Expectations; that is, the bringing up of somewhat that being unnaturally separated or made from the Blood, was offensive to the Lungs, or some Parts in the Breast appertaining to them. By Balsamicks, may be understood divers kinds of Medicines that are supposed to be endowed with a healing Power, such as are several natural Balsams, and divers fictitious ones in several Preparations and Compositions.

Again, under the second Head, *viz.* such as relate to the concomitant Symptoms, may be number'd,

First, Either such as seem principally intended to respect the Disorder only of the Blood; that is, the hectic Heats, Inquietudes, and by consequence only the other Symptoms that proceed from thence. And under these may be comprised all such things as are thought to mitigate and assuage that, as Emulsions, divers Preparations of oily and cold Seeds; and if I may name it, for it hath been in some use, the celebrated *Cortex*.
And

And Secondly, Into such as have been esteemed not only to cool, but nourish also, and amongst the chief of these are to be number'd Affes, and divers other sorts of Milks, Snails and their Preparations, and the whole Farrago of this Tribe.

Or, Thirdly, Into such as give only some present Ease or Relief to the most troublesome Symptoms, whether in the affected or any other Part; and under this Head are only to be number'd Opiates, in several Forms and Preparations; for by these the violent Fits of Coughing are quieted, the uneasie Nights are passed away in Slumbers, and some Truce is gain'd from the Troubles of a waisting and wearied Life. Under some of these Heads, may comprehended the principal Methods that are in ordinary Use in this Disease: With what Success every one's Experience will best inform him, if he please but to be impartial and heedful in his Observations. I shall only examine into the Reasonableness of them, and what I think may be expected from their Use, according to such Principles that are known, and are certain.

XI. First then, as to Pectorals, supposing, but not granting, them to be endowed with a peculiar Power to lubricate these Parts (which, by the bye is, inconceivable) and also to help to divide, part or unloosen tenacious Matter that here sticks or adheres, and so by that means to besit it with greater Ease, to be by
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the help of Coughing discharged: Yet in what we call Consumptions, what Benefit or Advantage can be reasonably expected from them? because in such the purulent extraneous Matter is already made, segregated and lodged, and cannot be expectorated by reason of the Structure and Situation of the affected Part, and not from any unfitness in the Matter. So that if Pectorals were of any real Use towards the separating such Matter by the Lungs, they could be here of no Advantage; by reason that here there is an unnatural and faulty Separation, by which the Body wastes, and Life is thereby endangered, and why then to be encouraged? But in reality, I am apt to think, there is no such Effect attends them, for if sometimes they seem to facilitate Expectoration, they seem to do no more than unloosen the Mixture of the Blood, and in that perform no more than what is common to other Medicines helping Separations. However, in this Disease we may observe that whenever Matter is so congested as to cause Coughing, that part of it that was in the reach of that Motion, will be discharged, upon which usually the Coughing ceases, and then by Intervals, repeats as the Parts seem by this means solicited; and thus returning, it will ordinarily be again brought up, until such time as they, viz. the Lungs, become so much impaired,
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injured, or rotted, as they become unfit for such a Performance, and then that Discharge ceases; not for want of Matter, for perhaps the Lungs are full of such, but for want of a Power, Capacity, or Ability of the affected Parts: And thus we may commonly observe Expecterations in such Cases, stop before Men die. And that this is so, I think appears farther evident in what is call'd *Vomica pulmonis*, where Matter coming to such a Fulness, is discharged by violent Coughing; which Coughing does again cease until fresh Matter being fully congested, it is again occasioned and then repeats. For whatsoever is brought from the Lungs, must be by the Motions of the Parts contributing to Respiration; by reason what is once separated from the Blood, and so without the power of the Circulation, becomes under the Laws of Gravitation, and so must descend, so that it cannot without such Assistance be rais'd up into the Mouth. For this noble Machine, a humane Body being made out of the common Mass of Matter, and so only differing from other Bodies; but as it is more excellently formed, and more divinely fashioned, does remain in all its parts incident to the Laws of Motion, whether it be received by Impulse or Gravitation, as all other physical Beings are. - It is true, the great Author of Nature hath superadded to this Mass of Matter, that thus constitutes a humane

humane Body, an active Power of beginning, altering, continuing, or hindring Motion in some particular Parts that are ordained for such Uses as properly belong to a free and intelligent Being, as every individual Man may easily experience himself to have Power to move or not, to walk or sit still, to do this or not do it: Which Power far transcends, and is exceedingly different from any thing that can belong to meer Matter; but yet that Power is limited to some Parts only; for such as are immediately subservient to Life, are not under it. Thus it is not in our Powers to regulate or alter our Pulse, the motion of our Bowels, or such like. Neither can we by any immediate Act of the Will, discharge or remove any unnatural Matter, made or deposited in any particular Part, as not having Organs whereby to do it. If therefore such is prepared or collected in a Part so situated or formed that it cannot flow out of it self, nor be discharged by the Motion of the organical Parts, by reason of some default in such Parts; to pretend, or to propose, to besit this to be discharged, which is already in its very Nature fit, seems to me meer trifling, since there is nothing wanting for its Discharge, but a Power and Capacity in the Organ, by which it should be done. For it being here to ascend, there can be nothing but a force from some organical Motion that can raise

it upwards. And to this it is evident, Pectorals can contribute nothing, and therefore in this Case can be of no use. It is true, there may be some things that carry the Name of Pectorals, that may be of some small Advantage in the present Case, such as *Tabulets*, *Troches*, or *Lobochs*, but then not properly for such Ends as seem to require Pectorals; but only as being held in the Mouth, and gently swallowed, do someways lubricate and please the Parts about the *Fauces*, that they are not so readily drawn into Coughing, whilst their Effects remain; so that somewhat may be here offered in Justification of their Use; but how far that will balance other Inconveniencies that may arise by them, I humbly offer to be considered.

X. But as to the second sort that I have termed *Balsamicks*, I can see nothing that can be hop'd for, or promised by their use. For if they are given with an intention of digesting, cleansing, healing, or someways curing the affected Part, they are a Jest; For what one Instance in Nature can be given wherein the *Part* can be healed or cured, so long as the Matter lodges in it? for the Part being the Cistern to contain it, How can it be so brought together to be healed or cured, when the very Matter that is in it must hinder such Agglutination? The very supposing it is a Contradiction. Neither is it
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ever attempted in Chyrurgery, where to pretend to heal, before the Matter is discharged, would be looked upon as an Effect of the oddest Ignorance. It is true, some, both natural and factitious Balsams, are experienced in Chyrurgery, to be noble and useful Remedies: That is, being sometimes applied to a sore Wound or Ulcer, they so dispose and alter the Parts of it, that the Matter that is there made, becomes afterwards digested, that is, so bettered in Colour, Nature, and Consistency, that the grieved Part is experienced to be in a promising Condition; but this Change thus made in the Sore or Ulcer, by means of which the Matter thus becomes digested, seems only done in that the Balsam being applied to the Sore it self, so alters the Surface of it, that the Pus that is there made, becomes so much bettered; for it is evident, the Blood, from whence this is by the Sore separated, is not by such an Application mended. So that although Experience teaches us that Balsams thus outwardly applied, are really useful Medicaments to digest and better Sores, and so to dispose them to heal; yet we cannot from thence infer they will be so if inwardly taken; by reason the first proceeds from the immediate Application of them to the griev'd Part, but the last must be done by altering and rectifying the Blood; between which two so different Effects, there is no manner

of Connexion or Agreement. Neither will I suppose this way of Reasoning be allowed in other Cases, for if it shou'd be taken for a Rule, that any Medicine that will digest or dispose a Wound to heal, if outwardly applied, must do the same if internally administered: The same Effects may with equal Reasons be expected from all other sorts of Medicines, and then that which is an Escarotick, that is, will suppress, eat off, or destroy loose and unnatural Flesh, if applied to the Part, may therefore, if internally taken, eat off a Carnosity, or root out *Polypos*, which, I believe, few will be so bold to venture, or so vain to expect. It is true, Ulcers, Sores, or Wounds, are always found of easiest Cure in such Persons whose Bloods are in a natural and healthful State, and on the contrary attended with more or less Difficulty according to the degrees of its Corruption; so that sometimes there is a necessity to correct and mend that before outward Applications will have their desired Effect: But then, I apprehend, this will not be always done by Balsamicks, but by Methods and Medicines adjusted to the particular Cases; not but Balsamicks may sometimes in such Cases have their Use. Farther, I never as yet, could observe any one internal Exulceration that ever could be said to be really cured by Balsamicks internally taken. In Gonorrhæas, where the Matter does not
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often lodge, and therefore if ever of any such Use, it might reasonably be expected from them there. Yet even there I need not insist upon the Instance, it being so notoriously known, how wretched, how trifling and how unsafe they are, if only relied upon; and if ever of any Advantage, it is only when gave in such Quantity, that they Purge, and so only answer what would be done by other Purgers.

XI. The next thing to be consider'd, is the second general sorts of Medicines that seem principally to regard the Symptoms that are rooted immediately in the Juices, and so are common to most parts of the whole Body, such as are the Hectic Heats, with the Consequences to that, and the wasting of the consistent *Parts*; and these Medicines, altho' before branched under two sorts, yet here may be conjointly consider'd. Amongst the chief of these are to be number'd several *Milks*, *milky Distillations*, *Emulsions*, divers preparations from *Snails*, cooling and oily *Seeds*, with their various Compositions, all which seem to be levelled, to cool and mitigate the Hectic Heats, and to nourish and restore the *consistent Parts*.

It is most certain some *Meats* and *Drinks* have a power to heat us, and it is as certain, that when we continue preternaturally hot, we are not well; and then we covet such things that will cool us. But whether there

is any Substance in Nature that can really do this, shall be our present Enquiry. To form a right Judgment of this, it will be necessary, first to consider Heat it self.

Heat, when taken as appertaining to a Substance, is only the Motion of its minute *Parts*; but when consider'd in relation to Men, imports such a degree of Motion that exceeds that of our Sensories.

But altho' Heat is thus taken when applied to Substances existing without us; yet when we consider it in our Bodies, we speak of it under another relation; for not then being able to examine the Degrees of Motion by our own Sensories; we appeal to such things as are often the effects of Heat in us; and esteem and judge of Heat by such Appearance. Thus because a quick *Pulse*, a dry *Tongue*, a high-colour'd *Water*, a scorching *Thirst*, &c. are Effects of what is called a preternatural Heat, (to distinguish from what is natural) whensoever we are afflicted with such Symptoms we complain, or at least accuse our Heat: And whatsoever mitigates or abates those Symptoms are usually esteem'd cooling.

All those Symptoms that are usually esteem'd the effects of Heat, are plainly formed by the Blood, and are founded either in the Violence of the Circulation, or some defect or fault in the Separation; and therefore always vanish when these two Things re-
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turn to their natural Tempers and Conditions.

The Blood, as hath been shew'd, is always despuming it self by the secretory Vessels; and so long as it regularly performs this, so long none of the above-recited Effects can appear, and therefore is not then esteem'd hot: But when it is preturbed in this Office, by the Violence of the Circulation, then those *Separations* being perverted, the above-mention'd signs of Heat break forth.

Medicines then that are properly cooling, are such as remove those *Symptoms* that are vulgarly esteemed the proper Effects of *Heats*; that is, such as retard the violent Circulation of the Blood, and dispose or besit it to return to its natural and usual *Separations*: For it is certain, a warmth in our Blood is congenite to Life, and therefore it is only a preternatural Heat that is to be extinguish'd, and *That* appearing from a rapidity in the Circulation, and fault or defect in the *Separation*, does naturally vanish, as they return to their just Temper.

Altho' it is most obvious that the Circulation may be intended, and the *Separations* hindred by the accession of some *Substances* into the Blood; yet it is not so equally certain, whether the Circulation can be by the same Methods retarded, and so the *Separations* by that way encreased. Because there is

nothing can directly, and of it self intend the Circulation (that being only made by the Vibration of the Heart) but only mediately and accidentally; that is, by adding a new Motion to the intestine Agitation of the Particles of the Blood, by which the Organs are stimulated to encrease their Vibrations, and so to intend the Circulation.

And as the Circulation is this way intended by a multitude of Substances; so does its Violence abate, when the Blood has again thrown off such things by the *Secretions*. For the Blood, as it is a Fluid, having a *Motion* congenite to its Particles; and the preternatural encrease of that *Motion* being the first Spring of all those unnatural Effects, which we term hot; altho' the addition of new Juices will intend the *Motion* of these Particles, yet no addition that can be made to it, whilst it runs in our Veins, can retard or stop that Agitation; because the very doing that is changing its Nature, by rendring it incapable to circulate: For should that *Motion* cease, it would be a consistent Substance, (as Water is when converted into Ice).

'Tis certain the Blood is compounded of such dissimilar Parts as could not continue in one Mass, did the Circulation hinder their dividing: And 'tis certain, that such Substances may be added as will render it unfit to circulate; and it is certain the Circulation being suppressed, it cools: And it is as cer-

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tain when this happens, Life ceases. But then such *Substances* that do perform this, do not directly abate the accelerated *Motion* of all the Parts of the Blood ; but only uniting with some of them, make such unfit to move in the small Conduits to continue the Circulation ; and the Circulation being thus hindered Life ceases, and then the Blood cools, because it becomes divided into Parts, which gradually lose such a degree of *Motion*, as to our Senses constitute Heat.

What we call Heat in the Blood, which indeed is preternatural, thus explained ; the cooling the Blood is only the reducing it to its natural Temper ; that is so far as discernable to us, the restoring it to its natural *Motion* and *Separations*. And such Medicines are call'd Cooling, that relieve those Symptoms that are esteem'd the effects of Heat : Thus those Substances that moisten and refresh the dry and parched Mouth, and restrain Thirst, are called cooling Medicines : Not that these restrain the heat of the Blood, but only moisten and cool for a time those Parts that become dry for want of a Moisture to be supplied by the Blood. And those very Substances that are vulgarly esteem'd Coolers, are so far from being endow'd with any such real Power, that sometimes when reasonably taken they will create Heats ; as is too often experienced by such, who being hot and dry, are willing to please their Palates

lates with large draughts of small Liquors, from which *fatal Fevers* have been produced.

But as preternatural Heats are never safely to be extinguish'd; so neither from the very nature of our Bloods; can they long continue, unless they are kept up by a continued addition of new Matter; by reason the Blood (as hath been already proved) by virtue of the intestine motion of its Parts, will someways or other despume it self, which will be either for the safety or death of the Diseased: And this Despumption being made, (for the safety of the Sick,) the Blood is in its natural Temper; and so long as this natural Temper remains, the Blood is cool.

And as by cooling *Medicines* is only intended such Things that seem to mitigate the *Symptoms* produced by the commotions of the Blood, so by cooling Diet is intended such Things as will not begin or encrease this Commotion, from whence such *Symptoms* proceed: The Words *cold, cool, or cooling*, when used in a physical Sense, being only to signify relations in the temper of the Blood; there being neither Food nor Physick that can be absolutely so, because the Blood is naturally warm.

XI. However, be it as it will, Milks, and amongst the rest, as deserving to be first named, Asses, and all the rest of the last-named Tribe of Medicines, are rarely observed

observed to create Heats; that is, if they are properly taken, it is no genuine Effect of them, for they usually occasion no hurry in the Blood, and therefore not doing that, they seem to be befitted for Nourishment; for Nourishment in Nature, being only an Addition or Opposition of new Parts to the solid and consistent ones, by which they are repaired or increased; which in a humane Body is brought to them by the Means of the circulating Blood. Now nothing is more certain, than that Motion is opposite to Rest, and the more violent any thing is moved, the more unfit it is to fix and rest: From whence it will follow, that the slower the Blood moves, the better it is disposed to adhere and fix upon the consistent Parts, that is, the better it nourishes: And on the contrary, the more violently and impetuously it moves, the lesser it nourishes, by reason by that it is hinder'd from uniting; and this appears evident, in that Men usually waste by Heat, as particularly in Fevers, and the more the Blood boils, that is, the more the Diseased burns, the sooner he wastes; and on the contrary, where the Blood moves but slow, Men rarely waste; or if they do, it is because they swell in other Parts, or that the Blood breaks or parts too much by some particular Separations; but in this State of Blood, they usually rather puff and swell, or else nourish plentifully; for the Parts of
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the Blood not being sufficiently moved, more readily adhere and unite to the consistent Parts. But although these milky, or other Preparations, will not of themselves create Heats, or occasion unnatural Disorders, yet such already existing, and being continued by a permanent, and not to be altered Cause; these Medicines, although perhaps they will not directly encrease them, yet cannot remedy them; by reason such having a certain Source from whence they are derived, they are not to be cured unless that could be removed.

XII. It is true, a wasted Body, and a languishing and almost expiring Life, may be perhaps preserved for some Hours, Days, or perhaps Weeks, by a constant and uneasy Use of such things, longer than if such affected Persons had pleased their Palates, or gratified their Appetites with a more desirable and unconfined way of living; but yet by this Penance there is no hope of being delivered from this Disease; the most that is to be expected from it, is only gaining a short Reprieve from a certain and approaching Death. And since then in this deplorable Case, we can by natural Helps pretend to but one or both of these two Ends, *viz.* Either to spin the Thread of Life a little the longer, or to make the remaining Hours somewhat the easier: Both which, I apprehend may be done by a Method very different

ferent to this; and that is by permitting such things, that, like the above-named, create no direct Heat, but are to most Palates much more grateful; and, as I have experienced them, as effectual to all Intentions. For cool Seeds with testaceous Powders, all Milks, and such things, are to some Persons extremely loathsome, so that their Sufferings in their Food and Physick, are equal to those of the Disease, and then the enjoining their Use, perfectly destroys the last Intention. Whereas Foods and differing Messes of Wheat, Barley, Oat-meal, Rice, and such things, may be so variously cooked, and sometimes so pleasantly acuated with Lemons, Oranges, Citrons, or Pomegranates, that they may be by some Means suited to most Palates; and for Liquors to restrain a scorching Thirst, condemned Small-beer no despicable nor ungrateful Liquor, or sometimes some pleasant Tincture of Roses, Barley-Water, or distilled Waters, from Oak-Buds, or Barks, or Herbs of a moderate Astringency; for Physick some Preparations of red Roses, but not clogged with such immoderate quantities of Sugar as usual; or sometimes some pleasant Gas of Sulphur, and several other things that seem grateful and of a moderate Astringency, varied to the liking of the Diseased, and sometimes altered to particular Indications. By such a Method may be proposed these Things:
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First, not to encrease the Symptoms proceeding from the Blood, and then being sparingly taken, they may not be so hastily thrown off, nor the faulty Parts too plentifully supplied; for the Circulation being, as I have formerly shewed, equal, these thus affected Parts will receive their proportion of Juices, and the more these Juices are encreased, the more the Blood must be poisoned from them, and of course the faster the Disease must decline. A second may be, that by the Use of such mild Astringents, the extravagant discharges, by which the consistent Parts must waste, may be somewhat restrained; for by that means, the Blood cannot so hastily throw off so much of its Parts. For I take it to be the most undoubted Effect of such, *viz.* Astringents, to hinder Separations, by as it were tying together the Parts of the Blood. And a third may be that by the Parity of Reason, as they hinder Separations from the Blood, so they may in some manner foreclaufe or prevent the admitting and receiving so readily such extraneous Parts into it, by which such Symptoms were occasioned. Not that it can be expected these can be of any happier Efficacy towards the curing the Diseased, but that they answer to the two proposed Intentions, and seem in my Thoughts, to go farther than the former Methods; which seem to me more to unloosen the Mixture of
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the Blood, and so more to enlarge these preternatural Discharges. A fourth and last is, the Use of Opiates, which quieting the Spirits, eases Pain, sedates and composes inordinate Motions; hence the Trouble of Coughing is for a time stopped, and restless and uneasy Nights may be passed away in doleful Slumbers. A Charity therefore to administer such Blessings to those as are so miserably wasted in Body, and uneasy in Mind; not that such can contribute any thing to the Cure of the Disease, but give a sort of Respite to the Troubles attending the Diseased. Thus far of Consumptions proceeding from some extraneous Matter, made, separated, and collected in the Lungs.

XIII. But by reason a Cough is usually a foregoing Symptom, and always an inseparable Attendant to this deplorable Disease, I shall here, by way of Appendix to this Chapter, cursorily enquire into the several Causes of it, and so by way of Inference, from them conclude what Method of Cure they severally seem to require. But the better to render this clear, it will be necessary briefly to repeat what hath been formerly prov'd, *viz.* That a Cough is a violent and preternatural Motion of the Organs appertaining to Respiration; whatsoever therefore can put these into such inordinate Motion, may cause Coughing. Now it is most apparent, all organical Parts, by Nature adapted

adapted for Motion, may fall into disorderly or preternatural Ones, from two very different Causes; First, either immediately from some Hurry, Tumult, or Disorder, began amongst the Spirits themselves, the only Instruments of all such Motions, as hath been already shewed in Diseases of the Spirits. Or, Secondly, where the Spirits are some-ways so affected, irritated or solicited into such Motions from some external, incongruous Matter, by the means of the tender and sensible Fibres or Membranes where they reside, and so are by that stimulated into Disorders. As to the first of these being a Disease proper to the Spirits, which hath been handled in the preceding Section, I shall therefore pretermitt the farther prosecution of it, and only refer my Reader to what hath been already said upon that Subject. And shall here only apply my self to the latter, which although it may be effected by very differing Causes, yet I shall for Methods-sake, endeavour to reduce them to some general Heads, under some of which they may be comprehended.

As, First, Under such where Coughing is occasioned by an Irritation from some unusual or incongruous Matter, in or about the *Larynx*, *Trachea*, or the Parts some way appertaining to them; and this being commonly separated thin, and so descending or
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distilling downwards, is called a Distillation, or according to the Greek, *Catarrhus*.

Or, Secondly, Under such as are caused by somewhat separated in the Lungs themselves, and this is usually thick Phlegm, and this is frequently to be observed in ancient People, as likewise in such as are vulgarly termed Phthifical.

Or, Thirdly, Under such that are occasioned by any extraneous unnatural Matter made, collected, or contained in a proper Cystis, in or about the Lungs, which at sometimes pressing, or some way affecting, or being uneasie to the neighbouring Parts, irritates them into Coughing.

For as to Coughs proceeding from Inflammations, as in Pleurifies, and such like, or from Matter at large, as in Consumptions, or from Water, as in Dropsies, or indeed such as are only dependant upon some other commonly known Disease, I shall here pass them over, and only touch at such as are considered as an entire Disease.

XIV. The first of these sorts are ordinarily caused, and the second either caused, or often encreased, by the Alterations in the Circumambient Air, and so are the common Effect of what we call taking Cold. Which I shall here endeavour to explain from what

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may be observed of it, what it is, and how it can or must be effected in a humane Body.

The Air, by which I understand that Fluid in which we live and move, and without which we cannot preserve our Beings, being so absolutely necessary to Life, that it cannot subsist without it: And the Air in this our *Britain*, is incident to a great variety of Changes, some of which are great and sudden, and are immediately perceived by us, as those in its most sensible Qualities; thus it is naturally sometimes hotter or colder, moister or drier, by which uncertain and unequal Alterations, our Bodies become differently affected, our Bloods sometimes disordered, and often disposed to unusual Separations; as appears from the Effects to be observed in our Bodies succeeding to them. But how, or in what manner these Symptoms that are attributed to Cold are produced, does not so readily appear. To comprehend then how this is effected, it will be necessary to survey those Parts that are immediately visited by the Air.

First, It is certain the Air enters into the Recesses of the Lungs, and communicates with the Blood there, by which means the Blood may be altered by it.

Secondly,

Secondly, It is certain the Air presses upon, and encompasses the whole Body, from which reason the whole Surface may be affected by its Qualities, *viz.* the Pores of the Skin may be sometimes dilated by its Warmth, and Perspiration therefore encreas'd; and sometimes the same Pores may by its Coldness, be constipated, and so Perspiration hinder'd: Sometimes by its Warmth, the Blood is powerfully enticed to the Skin; and sometimes by the Cold, the cutaneous Fibres so contract, that is, hinder'd in its progress to those remote Parts, and then flows with a brisker Stream to the more inward Parts: And the Blood, being by the Cold, disposed to separate, and running in greater quantity in the inner Regions (as being hinder'd in the outward) the Separations that are performed in these Regions, necessarily increase. It is from this Reason, Men's Bowels are generally more lax, and more Urine returned in the cold than warm Seasons; and as natural ones are thus enlarged, so unnatural ones are likewise formed from the same Reason: Hence it is that Coughs likewise are produced.

But whether the so differing Effects produced in humane Bodies, and are vulgarly denoted *by taking Cold*, do proceed from the Coldness, or are caused by any other Alterations in the Air, cannot, I think, be clearly

determined, neither is it much material to my present purpose to enquire; for it is sufficient for what I design, that unusual Separations are created by it, and that if such are made about the Parts appertaining to Respiration, they often sollicit them into that Motion we call Coughing. And if this proceeds then from such unusual Separations in those Parts, it is evident, it is properly to be remedied by hindring such. And the hindring or preventing these Separations, must either be done by the Means of the Blood, from whence they proceed, or by the Part where they are made.

If from the First, it must be either, first, from lessening the Quantity of it.

Or, Secondly, By diverting the *Separations* to other Parts.

Or, Thirdly, By putting the *Blood* into such a State that it may not so readily separate.

The first of these is perform'd by Bleeding, by which the Vessels being somewhat emptied, a quantity of the *Blood* being lost, and the Stream perhaps a little diverted by the Operation, the affected Parts are not so readily filled, nor of Consequence cannot separate so plentifully, so that by this means some present Advantage may be receiv'd by it. But by reason we rarely continue long without Food and Drink, and by such the *Blood* will be again supplied, and the Vessels
fill'd;

fill'd; unless there be some other Indications attending such a Cough, that seem properly to require it, it looks to me but trifling to practice it; by reason bleeding rarely if ever hinders *Separations*, but for the most part encreases them, as I have formerly proved; so that altho' by doing that some present Relief may perhaps, for the Reasons urged, be received by it, yet they cannot be of any continuance.

As to the second, the diverting or turning this *Separation* another way, we must to conceive right of this, consider, that the *Blood* circulating by virtue of an Impulse received from the Heart and Vessels; must always run equally in proportion to the Capacity of its Conduits thro' which it passes, unless hindred in any particular part, and then it must rush in greater Quantities some other way; or unless when some particular part being by some ways so alter'd that it becomes more susceptible of it, and then being a Fluid and moved by Impulse, it must pass in greatest quantity where it finds least resistance. So that then to divert or turn this *Separation*, we must someways change the stream or current of Circulation, by causing it to run with greater freedom into some other Parts, which it will do where it meets with least Opposition in its Course; and by this means the affected Parts may be defraud-

ed of their usual Proportion, the Blood running with more ease thro' other Parts. And this may be done either with, or without Evacuation. All Evacuations perform'd by the motion of the organical Parts do necessarily bring the Blood in larger quantities that way, as I have shewed in Vomitings and Purgings, and therefore must make derivation from parts so affected: But by reason the *Spirits*, the Instruments of such *Motion*, are often much disorder'd by such Operations, and there being a Communication between the Nerves, subservient to respiration, and those inserted into the *Stomach* and *Bowels*, Coughings are sometimes encreased by them, unless afterwards quieted by Opium. Besides, these seem to bring the *Blood*, too much from the *Surface*, from which these *Symptoms* originally flow: And therefore it seems more natural and safe to endeavour to render the Circulation equal, by carrying it more to the *Surface*: So that these parts may be reliev'd that way. And to do this it is evident we neither want natural nor artificial Helps; the Natural are such as remove the Cause in the Air, by which these troublesome *Separations* are supposed to be produced; and thus warmer Seasons or hotter Climates most effectually do it, as is often experienc'd by such that are in the Winter afflicted with Coughs and Catarrhs, but are perfectly deliver'd

liver'd from them, by Summer-heats, or by Travelling into warmer Regions. It is not improbable but artificial Heats, might perform the same, could they be contrived to be more equal and continu'd, and could they be attended with an open Air, Liberty, and Scope for bodily Exercise; by reason they seem to answer all the former Intentions; but this is not to be perform'd without great Difficulties. There being but few Persons that Health, Business or Pleasure, will permit to keep in such Measures as this seems to require: Besides greater Inconveniencies than Benefits as to Mens Health, might arise by this Usage; because by thus always confining Mens Bodies to such degrees of outward Heat, as might prevent such Separations from the Blood as cause Coughs, would naturally bring on other Infirmities that may be more troublesome and dangerous. But some being impatient under these Coughs will not attend to slow Remedies, but have recourse to hasty and violent Methods, such as are *Blisterings* and *Sweatings*; by the first of their Derivations may be safely, and are very often effectually made, in these Cases, for by them not only a serous Juice is discharg'd, but the blister'd Parts being fretted and injur'd by them, the *Blood* seems to be allur'd and drawn that way; for, I think, all Observations will plainly teach us, that

whatsoever heats, inflames, vexes or swells a Part, does by that, cause the *Blood* to move brisker thither; this, I think, is particularly confirm'd in that rubbing or frictions upon a particular Part, or any warm Application, whether of actual or only potential Heats, as immersing Hands or Feet in warm Water, or holding them to the Fire, or applying any *Medicines* of hot and fiery Natures, all which bring the *Blood* in greater quantity to the Part so used; as is evident by the Turgency of the *Blood-Vessels*, their readiness to continue bleeding, and by the Intumescency of the whole Part; and the *Blood* could not be brought in such unusual Proportion this way, but that some other Parts must at the same time, be defrauded of a Moiety that they otherwise must have received.

But *Sweating*, altho' it evidently evaporates the Serum of the *Blood*, and altho' in that the *Blood* is impetuously forced and impelled to the Surface, a Cough may be sometimes remedied by it; yet this being effected in that the *Blood* is too violently whirled about in Circulation, by which means some of its thinner and watery Parts strain and evaporate thorough the Pores of the *Skin*, so that altho' by this *Sweating* the internal unusual Separations may be diverted, yet this violent and tumultuous motion of the *Blood*, by which it is perform'd, will disorder and con-

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found the natural *Separations* by the *Secretory Vessels*, as every one may observe that will but heed those, in or after such *Sweats*. And the whole *Mass* being by this means once put into such *Confusion*, may sometimes pass into so ill a State as may not easily be recover'd. For the *Blood* being by that Violence, that is necessary for the procuring such *Sweats*, put out of its ordinary and quiet *Motions*, its Parts are so confounded, that the regular *Separations* are disorder'd; as may be seen by the *Urine*, *Saliva*, and such like. And seeing it cannot be assur'd, that when this Evacuation is terminated, that the *Blood* and all its *Separations* will immediately return to their former, natural and quiet State, because it hath sometimes been unhappily experienc'd, it will not; by those who have unadvisedly used *Baths*, *Humming*, or other ways of *Sweating*, who have by that contracted very unlucky Diseases: Wherefore I think never without great Circumspection to be used.

XV. But if we endeavour the Cure of this sort of Coughs by the third Intention, *viz.* by hindring the *Blood* from running into these *Separations*, it must be done, either first, negatively, that is by not ingesting such things as are experienced to be apt to continue these *Separations*, such as are in the general all small, thin, and cool Liquors. Thus some have

have delivered themselves from these Catarrhs, by an absolute forbearance of all Liquids.

Or, Secondly, Positively, that is, in drinking only such Liquors, and that in a moderate Quantity, as will warm and invigorate the *Blood* as *Sack*, *Sherry*, or strong Wines, by which *Separations* are hindred; or otherwise by taking such things as seem to cement the Parts of the *Blood*, as some Astringents will certainly do.

XVI. But if we attempt the remedying a Catarrh by the Part affected it self, it must be by the means of such things that can someways reach these very Parts, whereby so to alter them that they may not permit such Juices to pass; and these being about the *Trachea* nothing can come to affect them, but what can pass with the Air; that being the only Body that is admitted into those Recesses, and that therefore must pass in the Forms of *Smoak* or *Steams*; and it is by this means that sometimes the Fumes of some Gums, as *Mastich*, *Olibanum*, *Benzoin*, are found to be *Medicines* that powerfully stop *Distillations*; the Parts affected being so alter'd by these *Fumigations*, that they will not permit such *Separations*. There is another way internally of affecting the very Part, but that is not immediately by stopping the *Separation*, but only by hindring the Parts of
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being susceptible of an irritation from them : And this is only done by the use of Opiates, which quieting the *Spirits*, (as I have formerly shew'd,) hinders them from being so readily stimulated into *Motion* ; and by that means these Parts not being so often moved and exagitated by Coughing, the separated Matter is not so plentifully discharg'd, and of Consequence not being by that so often emptied, it is not receiv'd in such quantities as otherwise might have been, had they not been thus quieted.

XVII. As to Coughs, comprehended under the second Head, that is, such as seem to be caused from a thick Phlegm separated or made in the Lungs themselves, as may be concluded from what may be observed in the manner, labour and difficulty in Breathing, as also from a sort of ratling or wheezing before Expectoration, and also by the great Ease and Relief by that Discharge: All which seem plainly to indicate, that such Matter comes from the Lungs. In this Case, two Things seem principally to deserve our Consideration : The first concerns the Separation : The second, the Expectoration of the Phlegm here produced.

The first, concerning the Separation of this Phlegm, is, that Persons that are afflicted with this sort of Coughs, generally find them most troublesome in the Winter-Months, this Mat-
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ter being more plentifully generated in such than in the hotter Seasons, which therefore it is probable proceeds from some of the Reasons already assigned in *Defluctions* or *Catarrhs*.

The second is, that such Persons as labour under these Coughs, are usually worst, being almost suffocated in moist, or haizy Weather, or thick and crassid Air, which seems to proceed from some hinderance in Expectoration. Thus such Persons will often be almost choaked in *London*, when but removed into the Country, will expectorate freely, and breath with less difficulty. For the Lungs being the proper Organs in our *Bodies* for the Reception of Air, must immediately partake of any sensible Change in that, and whatsoever is discharged from them, is forced up by Coughing, by which the received and contained Air is so forcibly expelled, that it buoys and carries up thick Phlegm which is there generated. So that when the Air, which is an Assistant to this Evacuation, is so altered as to become a hindrance to it, this will not without great difficulty be performed. It is not very difficult to derive the Reasons of this Unfitness in such States of Air, to promote Expectoration from the known and certain Properties of it, *viz.* its spring, weight, and thickness; but that not being material to my present Design, I shall not tire my Reader with it.

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For by whatsoever Cause the Air becomes unfit to promote or continue this Discharge, it is evident, if we intend the Ease or Relief of it, if it is by internal Remedies, it must be performed by the *Blood*, and such then can only regard the *Separation* of this Phlegm, and not the Expectations of it, which is a Work purely organical. It is true, if this Phlegm can be turned or diverted from the Lungs, or someways hindred from being there made, there then will be nothing to require Expectoration. But that in Persons where these Coughs have been of long continuance, is not, as I apprehend, feasible, for the Lungs being somewhat weaken'd, or at last altered; that is, this Phlegm having been used to be separated there, the Lungs having acquired a Capacity or Disposition to continue it; whenever then the Blood is disposed to part with such Matter, they are befitted to receive it; so that unless the Lungs themselves can be altered, this Cough will not be perfectly remedied; and local Defaults are not often cured but by local Applications, which these do not permit. It is true, by other Evacuations, Derivations may be made from these Parts, as sometimes by Bleeding, or perhaps by Vomiting or Purging, according to the Indications, but then these only regard the present Evils, for nothing can be exterminated but what already is; and here in the present Case, the
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Organ it self is supposed to continue in a State befitted to receive such Separations whensoever the Blood is disposed to make them; so that unless they are repeated as often as such Matter is generated, such surprising Symptoms cannot be prevented by them: And these usually affecting such Persons whose Age, Habit of Body, or other Circumstances, will not safely admit of such weakening and vexatious Methods, and especially when they so frequently and so uncertainly repeat, as they do here in *England*, from the Uncertainty of the Air; wherefore it hath been thought better to have recourse to other Evacuations that are constant and permanent, such as Fontanels, and such like, by which if the Blood finds but a ready way of defecating it self, they become as sinks to carry off these troublesome Separations, and fewer of the Inconveniences that may attend the former, if too often used, will accompany this. But if notwithstanding these or any other Endeavours to hinder or divert these Separations upon the Lungs, they do return, as it is certain they sometimes will, and then not being to be removed, unless they can be discharged from the Part; and since the discharging it from thence by Expectoration, is an Act merely organical; all that can be done by internal Medicines towards that Discharge, must be in some ways preparing or befitting the Matter

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ter, that it may be the easier thrown up by Coughing, which being in the present Case to be performed by the Means of the Blood, can only be by the disposing of it to part and divide from it: By reason when it is once entirely separated and thrown off from the Blood by these Parts, it cannot farther be altered or affected by it, being then perfectly divided from it. So that if Matter separated upon, or by the Lungs, is not discharged by Coughing, it must proceed either from the Unfitness of the Matter to be raised, or from the present Situation of it, that it cannot be forced up by that Motion: Neither of which can be remedied by the Blood, because being separated from it, it is not in its Power to remove or alter. So that whatsoever can be performed by Pectorals, that is, by Medicines supposed to have a Power to ease those Parts, or to contribute to Expectoration, can have no effect here, unless they dispose or incline the Blood to this Separation; the discharging of it when it is separated being solely performed by the organical Parts. And it is from this Reason, we may observe Pectorals or Medicines easing Coughs, by helping Expectorations, to be so extremely different in their most obvious and common Qualities; no one Simple or Composition that I ever yet experienced, that was universally
so;

so; that is, to all Persons, and all times; But seem only so as they are adjusted to the Tempers and States of Blood, whereby they dispose them the better to these Separations, which being so very different, it is no wonder that Medicines that appear of so very different, and even contrary Natures, do sometimes contribute to the same End: Thus sometimes Acids, volatile Salts, Oils, Sweets, Bitters, and Sulphurs, have been recommended as Pectorals, and have really been found so; and yet some of them are of very opposite Qualities. And thus bleeding in Affections of the Lungs, hath oftentimes very different Effects; for in those Wheezings, Shortness of Breath, or Difficulty in Breathing, wherein the Lungs seem oppleted and stuffed, in that the tenaceous Phlegm is not well parted from the Blood; by Bleeding the Vessels being somewhat emptied, the Matter to be expectorated, being divided and parted from the Blood, by reason that in its circulatory Motion, not pressing now so forward, these separated Parts are left more to themselves, and being so disunited, they are the easier by Coughing expectorated; for we generally observe in these Cases, Expectoration succeeds the better by Bleeding. Whereas when such Symptoms proceed from any thing actually and perfectly separated and lodged

lodged in the Sinuofities of the Lungs, and so absolutely out of the reach of the circulatory Motion: Bleeding is so far from being of any Advantage to the Diseased, that it is marvelously injurious, as may be observed in Hydropical, and many such Cases.

XVIII. The third general Head, under which I have comprised Coughs, are such that are caused from somewhat Extraneous, made, generated, or collected in the Lungs, or in some Parts appertaining to them, and is not contained in its own proper Coat; which pressing, or being someway uneasie to the neighbouring Parts, irritates them into Coughing: Now if this thus formed preternatural Part is but endowed with its proper Vessels, whereby it is fed, it is no more by any internal Medicine, to be destroyed, than if it had been born with us, as I have formerly proved; hence Coughs proceeding from this, are never to be remedied. It is true, Exacerbations may happen in these Cases, for the Blood being disordered, may by reason of these Tumours, be more solicited into Coughing, by which Separations may be encreas'd this way, and then such must be remedied by reducing the Blood into its former State.

C H A P. VI.

Of Salivation.

HAVING thus, with Brevity, performed what I proposed of the general Nature of Diseases, by shewing what they are, and how produced (so far only as they can become knowable to us) and the probable Methods by which they are to be remedied: It only remains that I fulfil what I have promised in the former Part of this Discourse, to say a Word or two of Salivation; which is an extraordinary and preternatural Separation, made, caused, or effected by Mercury, or its Preparations, from the Blood by the Salival Glands, and from thence discharged out of the Body.

But altho' the Salival Glands are the Instruments by which this Evacuation is performed, yet it is not effected, like Vomiting or Purging, by any Motion proper to them, but by the means of the Blood itself: For the Blood being disturbed by Mercury, breaks, colliquates, devides, and spews out some of its Parts by these Glands: And that this is the real Method by which Salivation is effected, appears by these following Reasons. First,

First, In that the Salival Glands have no Motion of their own, whereby to procure or promote this Evacuation.

Secondly, In that there are no Passages by which the Mercury can be convey'd to these Glands, but by the Blood.

Thirdly, In that there appears evident Marks of Disturbance in the Blood, proceeding and accompanying this Evacuation; for it moves and circulates, fluctuates, and sometimes spews out Parts by other Passages, *viz.* Vomitings, Looseness, &c.

Fourthly, In that Salivations may be diverted or hinder'd by Purging; that is, by turning that Separation of the Blood that ran by these Glands into the Bowels.

By all which Observations, it is evident, that the Blood is first tainted and disturbed by the Mercury, [and these Glands only by the Blood, and are no more than the Sinks to carry off the foul Parts of the Blood, which by the force of Mercury are brought this way.

II. Mercury being observed to have this certain Power to break, colligate or some-way so to affect the Blood, as to cause it to separate, purge, or defecate it self by a Flux thorough the Passages in the Mouth, which Discharge continuing for a considerable Time (as Days or Weeks) the Blood

has leifure and opportunity to purge and purifie it felf; that is to feparate, divide from, and exterminate its poifonous, offending, and difagreeable Parts, and by that means to become more homogenous and fine.

And as the Blood thus throws off its impure parts by this Evacuation, fo it is plain the Advantages that are received by this Evacuation, are chiefly owing to the long and uninterrupted Continuance of it, and not from any thing fpecific in the Mercury, for the Mercury only puts the Blood into this Condition of purging it felf; and if therefore the Blood is able to caft out the hurtful Parts, it hath by this means an opportunity of doing of it; and although the ufual Method is by the Salival Glands, yet fometimes it happens otherwife.

For it is moft certain, fuch is the Nature of this active Mineral, or any of its Preparations that retain its Nature, that if they are given or applied in proportion, they will fo diforder the Blood as to put it in a ftate of purging, fretting, or fomeways fpewing out its Parts, I do not fay this will be always of Advantage to the Diseafed, for that muft be as it is properly or improperly applied) neither will it be in the fame manner, for that will depend upon the Difpofition of the Blood, and the Aptitude of the Veffels, for *qua data porta ruit*, it
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will break out, or pass where it meets with least Resistance. But, I say, it will always some way so affect the Blood, as to make it spew out some of its Parts, and by that defecate it self. It is true, this will not be equally performed in all Persons, neither in the same quantity, nor by the same way: Yet this is the certain effect of Mercury, and what it will always do, if administered or applied in quantity, and but admitted into the Blood.

Mercury is a Substance so opposite and repugnant to the Nature of our Blood, that if received in too large a proportion into it, hinders, perverts, and destroys those very Actions and Functions in which Life consists, and is never admitted into the Mass, but it gives some Disorders (in proportion to the quantity of the Mineral, and the Disposition of the Blood): And by these Disorders, it becomes disposed to make various Separations which are salubrious or dangerous, according to the Course it takes in making them: Wherefore Physicians with great Caution and Judgment, often direct them towards the Bowels by Purgings. And as the real Operation of this Mineral consists in that it disposes the Blood to those Separations by which it purges, defecates, and purifies it self; that is, that it exterminates the peccant, offending, or poison-

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ous Parts by them: It must follow, that the happy Successes to be obtained by its Use, must absolutely depend upon the Continuance and Proportion of the Evacuations, in that the Blood may have time and Opportunity to do it; and not from any thing specifick in it, or in any of its Preparations. It is true, by preparing of it, its poisonous Qualities may be laid asleep, or perhaps destroyed, at least they may be mitigated or lessened.

But then those Powers, Virtues, or Efficacies, by which it only disposes the Blood to these Separations, and by which its happy Effects arise; (which seem to be the main End in giving of it) must likewise be either destroyed, or in proportion lessened, by reason they proceed from these very Qualities: So that then to attain the same Effects by such Preparations, they must be proportionably encreased, or otherwise they cannot perform them; and then the Question is, whether they are not equally dangerous? for if they do not, it is plain they have changed their Natures, and so are no longer to be esteemed Mercurial. Besides, I never yet could observe any one Preparation of Mercury that was administered with real Success, but it hath someway more or less disposed the Blood to Separations, that would be succeeded with some Evacuation,

uation, sooner or later, according to the Power of the Medicine: It is true, that where they have been given in some small and trivial Quantity, it hath not always been heeded, by reason perhaps such have been drowned or lost by intermediate Evacuations.

III. In a Salivation then, the Blood continually purges and purifies it self by discharging such Quantities by the Mouth, and sometimes likewise by other Passages, and during which, it hourly receives such Supplies of thin and harmless Liquors, which readily running out at these Vessels, must wash out, and carry away peccant, offending, or incongruous Parts; so that the remaining part of the Mass that continues red, and circulates, and is only called Blood, which keeps in its proper Conduits, and will not pass these Vessels, will become somewhat more homogeneous and agreeable, although it does not always follow in respect of the Man, that it is better'd (which are two different things) for Salivations are not always advantageous. And in this powerful Operation, the Blood seems to do nothing uncommon or extraordinary, for it every Day purges and fines it self by these and other Secretory Vessels and Passages, with this only difference, that the Blood by the Use of Mercury is more disorder'd, broke,
or

or altered, whereby it is more disposed to Separations; and the Mercurial Particles being received into the Blood in such a proportion only, that they are able to create this Disturbance, but not in such a quantity to destroy Life, in hindering the Circulation, are again expelled by these Vessels, as being offensive and disagreeable to the rest of the Blood; and in their Passage here, they someways wound, alter, or injure these Glands, by which means they heating, swelling, and enlarging, do give more liberty to the Blood to run this way; and the Pores or Passages of these being enlarged, by reason they are swelled, admit of larger Quantities of these Juices, to strain thorough them, by which means the Blood more powerfully defecates it self. And this is abundantly confirmed, in that the Success of a Salivation, in such Cases where it is of real use, is always answerable to the height and continuance of it. So that in this Operation, the Blood seems to do no more than what is naturally performed in all Fluids made up and compounded of different and unlike Parts, for such being left undisturbed, will sooner or later fine and purifie themselves, (and this may be hastened by Art) that is, as they will by a Motion natural and congenite to themselves, part, divide, separate, or expel their incongruous and heterogeneous Parts;

so

so that Motion may likewise be intended by the Admixture of some disagreeable Body with it, and thereby its Separations hastened and encreased. With this only difference that such Liquors being quiet and free from an external Impulse, act in their own natural way, and so despume themselves by jostling and tumbling the unlike parts to the top, bottom, or sides, according to the Laws of *Hydrostaticks*. But the Blood being hinder'd in this, by the circulatory Motion, by which its parts are continually blended and confounded together, that there is neither space, leisure, or opportunity for that Performance; the Despumatioa is done by the Secretory Vessels; which are so excellently fashioned, as readily to let pass such parts as are useles or hurtful to the Blood. And when a Secretory Vessel becomes pained, inflamed, and swelled, it seems to be more susceptible of these Juices, the Blood being called in greater Quantities that way, (as appears probable by the unusual Pulsations upon such Parts) and then being disposed for Separations, it may the better by this Operation deliver it self from all offending Matter.

IV. Whereas in other Evacuations, such as Vomitings or Purgings, which being performed only by the Motion of the Organical Parts, whatsoever is evacuated by them immediately

immediately from the Blood, must be brought into the Bowels, by that very Motion by which they are made; and therefore can be of no longer continuance than that Motion; the Blood being only forced to separate that way by that their Motion, and not by any internal disturbance in it made by the Medicine; and therefore such Separations never out-live the Motion of the Bowels, as will appear most evident to any one who will but impartially consider or observe them. However, if we but reflect upon the nature of our own Bodies, it will plainly be found impracticable so to continue Evacuations made by organical Motion, as to make them answerable in their Effects to a Salivation: For should we suppose the Blood to be equally disposed to part with its peccant Matter by these ways, as by the Salival Glands; yet such Matter being diffused through the whole Mass, the Blood could part with no more of it during such Operations, than what could be separated by the Vessels about the Bowels in that time, for what was not there, could not pass there; and if we but weigh what Juices during the short time of such Operations, in proportion to the whole Mass, can there pass, and what Moiety of noxious Matter with them, we shall easily collect why a Salivation must be in some Cases the more powerful, as it is the most lasting.

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Besides the parting or separating of offending Particles, seems to be a leisurely Act, being rather hindred than assisted by such Violence as is requisite to those Evacuations, and to continue these, seems unpracticable, by reason our Bodies are so constituted, as to require a daily Supply of new Juices for natural Uses, which must pass into the Blood, which they could not well do, should Purg- ing or Vomiting be so continued; by reason they would constantly discharge such; so that although we should eat and drink, yet our Bodies being thus defrauded of all Nourish- ment might starve. Whereas in Salivations; what we take, passes into the Blood before it can be again by that discharged; so that our Bodies may receive some Benefit by it, and be delivered from those Inconveniencies that attend the other, which are also in their very Natures impracticable to be thus continued.

V. In short, Salivation being nothing in nature but the Effect of a mighty Separation made by the Salival Glands, occasion'd by Mercury or some of its Preparations, which being in its Nature highly disagreeable to our Blood, will some way so marvelously disorder it, as to cause it to purge, divide from, and throw out several of its Parts this way; by the means of which, such peccant, morbifick, or poisonous Matter that was la-
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latent in the Blood, and will associate and pass off with these Juices; is otherwise exterminated with them; and this Operation being so very lasting, the Blood has thereby time and opportunity to free and extricate it self from such offensive Matter, and that this is what Mercury really performs in our Blood, appears abundantly manifest in that, if the Quantity of it be too much enlarged, instead of a Medicine, it becomes a Poyson; that is, instead of curing, it destroys; for the Blood being disordered and over-powered by the Quantity, being unable to purge and defecate it self by these or any other Passages, it swells and expands in its own Vessels, by which means its Circulation becomes gradually hindered, and at last suppressed, and then the Diseased dies. And thus the Effects of Mercury are, and must be as the Proportions are adjusted (not that all Bodies will be equally affected by the same Quantity) for if it be too sparingly administered or applied in such Cases as really deserve its use, it does too little, as not disordering the Blood enough, whereby it may be empowered to defecate or purge it self: But if in too great a Quantity it does too much, for then it puts it into such a State as it cannot rightly Purify.

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